

# SAN Configuration Guide

**CLARiiON Storage**





# **QLogic SAN Configuration Guide for CLARiiON Storage**

**Version 4.0**

Copyright © 2003-2005 QLogic Corporation. All rights reserved.

THE INFORMATION PROVIDED IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, INTEROPERABILITY, OR COMPATIBILITY. All of the Partners' products are warranted in accordance with the agreements under which the warranties for the products are provided. Unless otherwise specified, the product manufacturer, supplier, or publisher of non-Partner products provides warranty, service, and support directly to you. THE PARTNERS MAKE NO REPRESENTATIONS OR WARRANTIES REGARDING THE PARTNERS PRODUCTS OR NON-PARTNER PRODUCTS AND NO WARRANTY IS PROVIDED FOR EITHER THE FUNCTIONALITY OR PROBLEM RESOLUTION OF ANY PRODUCTS.

Within this document, "Partner" refers to QLogic and the other companies referenced herein who provide products or services that you may use along with QLogic products. These Partners include, but are not limited to, CLARiiON, Brocade, McDATA, Sun, and Microsoft. The inclusion of the Partners' products on an interoperability list is not a guarantee that they will work with the other designated storage products. In addition, not all software and hardware combinations created from compatible components will necessarily function properly together. The Partners do not provide service or support for the non-Partner products listed, but does not prohibit them from being used together with their storage products. During problem debug and resolution, the Partners may require that hardware or software additions be removed from products to provide problem determination and resolution on the supplied hardware/software. For support issues regarding non-Partner products, please contact the manufacturer of the product directly. This information could include technical inaccuracies or typographical errors. The Partners do not assume any liability for damages caused by such errors as this information is provided "AS IS" for convenience only; the reader uses this information at its own risk, and should confirm any information contained herein with the associated vendor. Changes are periodically made to the content of this document. These changes will be incorporated in new editions of the document. The Partners may make improvements and/or changes in the product(s) and/or the program(s) described in this document at any time without notice.

Any references in this information to non-Partner websites are provided for convenience only and do not in any manner serve as an endorsement of those websites. The materials at those websites are not part of the materials for this Interoperability Guide and the use of those websites is at your own risk. Information concerning non-Partner products was obtained from the suppliers of those products, their published announcements, or other publicly available sources. The Partners have not tested those products and cannot confirm the accuracy of performance, compatibility, or any other claims related to those products. Questions about the capabilities of non-Partner products should be addressed to the suppliers of those products. All statements regarding the Partners' future direction or intent are subject to change or withdrawal without notice, and represent goals and objectives only. This information is only for planning purposes, any use of the information contained herein is at the user's sole risk. The information herein is subject to change before the products described become available.

QLogic, the QLogic logo, the Powered by QLogic logo, QLogic Press, the QLogic Press logo, QLogic Simplify, SANblade Manager, SANbox, SANbox2, SANsurfer Management Suite, and SANtrack are trademarks or registered trademarks of QLogic Corporation in the United States, other countries, or both. EMC, the EMC logo, CLARiiON, CLARiiON CX400, and CLARiiON CX600 are trademarks or registered trademarks of EMC in the United States, other countries, or both. Brocade, the Brocade logo, and Silkstorm are trademarks or registered trademarks of Brocade Communications Systems, Inc. in the United States, other countries, or both. McDATA, the McDATA logo, and Sphereon are trademarks or registered trademarks of McDATA Corporation in the United States, other countries, or both. Microsoft is a trademark or registered trademark of Microsoft corporation in the United States, other countries, or both.

**QLogic Corporation**

26650 Aliso Viejo Parkway

Aliso Viejo, CA 92656

Phone: (949) 389-6000 or (800) 662-4471

Fax: (949) 389-6009

# Table of Contents

<b>Introduction .....</b>	<b>9</b>
<b>Test Philosophy .....</b>	<b>11</b>
<b>Application-Level Interoperability Test.....</b>	<b>11</b>
<b>Device-Level Interoperability .....</b>	<b>11</b>
Server Interoperability .....	11
Storage Interoperability .....	11
Application Device-Level Interoperability.....	11
<b>Tested SAN Configurations .....</b>	<b>12</b>
Single-Switch Configuration: SANbox2-64 .....	12
Cascade Configuration: SANbox 5200 .....	13
Cascade Configuration: SANbox 5602 and SANbox 5200.....	13
Cascade Configuration: SANbox 5000 Series and Brocade 3800 .....	14
Cascade Configuration: SANbox 5000 Series and McDATA 4500 .....	14
Cascade Configuration: SANbox 5000 Series and SANbox2-64 .....	15
Cascade Configuration: SANbox2-64 and McDATA 4500 .....	15
Cascade Configuration: SANbox2-64 and Brocade 3800 .....	16
<b>Statement of Support .....</b>	<b>17</b>
<b>Driver and Firmware Levels .....</b>	<b>19</b>
<b>QLogic SANblade HBAs .....</b>	<b>19</b>
<b>Switches.....</b>	<b>19</b>
<b>EMC CLARiiON Storage .....</b>	<b>19</b>
<b>Application Software .....</b>	<b>19</b>
<b>Operating Systems .....</b>	<b>20</b>
<b>SAN Setup and Configuration .....</b>	<b>21</b>
<b>Server Configuration .....</b>	<b>22</b>
Fibre Channel HBAs Overview .....	22
Assumptions .....	22
Installing SANSurfer Management Suite.....	23

Configuring the Server on Windows .....	30
Installing the Windows Driver .....	30
Configuring the HBA .....	34
Configuring the Server on Red Hat .....	37
Installing the Red Hat Driver .....	37
Configuring the HBA .....	39
<b>Storage Configuration .....</b>	<b>43</b>
CLARiiON Storage Overview .....	43
Assumptions .....	43
Configuration Steps .....	44
Creating a Storage Group .....	44
Creating a LUN .....	46
Assigning a LUN to a Storage Group .....	48
Registering a Host .....	50
Assigning a Host to a Storage Group .....	53
<b>Storage Network Configuration .....</b>	<b>55</b>
Fibre Channel Switches from QLogic .....	55
SANbox 5000 Series Stackable Switches .....	55
SANbox2-64 Switches .....	55
Configuration Process .....	55
Installing the SANsurfer Switch Manager .....	56
Initial Switch Configuration .....	60
Command Line Configuration .....	68
Switch-Specific Configuration Steps .....	69
<b>SANbox 5000 Series Configuration .....</b>	<b>70</b>
Configuring Port Properties .....	70
Connecting Cables .....	73
Configuring Zones .....	74
Activating the Zone Set Manually .....	80
<b>SANbox2-64 Configuration .....</b>	<b>83</b>
Configuring Port Properties .....	83
Connecting Cables .....	87
Configuring Zones .....	88
Activating the Zone Set Manually .....	94

<b>Index.....</b>	<b>97</b>
<b>QLogic Press Review .....</b>	<b>101</b>
<b>QLogic Company Information .....</b>	<b>103</b>





# Introduction

The *QLogic SAN Configuration Guide for CLARiiON Storage* is a comprehensive resource for developers and consultants interested in deploying QLogic solutions.

## How to Use This Guide

This guide provides detailed solution configurations and interoperability information, which allow you to deploy a QLogic-powered SAN. Updated versions of this guide can be downloaded from the QLogic website at: <http://www.qlogic.com/interopguide>.

End-to-end interoperability not only includes switches, host bus adapters (HBAs), and storage products; it also extends to the component level. Therefore, this guide includes detailed information outlining the exact configurations tested by QLogic and the procedures necessary to deploy a SAN.

## For More Information

Since 1993, more than 50 million QLogic products have shipped inside storage solutions from Cisco, Dell, EMC, HP, IBM, NEC, Network Appliance, and Sun Microsystems. In 2004, QLogic was named to *Fortune* magazine's 100 Fastest Growing Companies and *Forbes* magazine's Best 200 Small Companies lists.

Additional QLogic resources can be found at the following locations:

### Fibre Channel Host Bus Adapters

[http://www.qlogic.com/products/fc\\_san\\_hostadapters.asp](http://www.qlogic.com/products/fc_san_hostadapters.asp)

### Fibre Channel Switches

[http://www.qlogic.com/products/fc\\_san\\_switchs.asp](http://www.qlogic.com/products/fc_san_switchs.asp)

### QLogic Technical Support

<http://www.qlogic.com/support/>

### Interoperability Guides from QLogic Press

<http://www.qlogic.com/interopguide/>



# Test Philosophy

The QLogic SAN configuration test philosophy is broken down into two test levels:

- Application-level interoperability
- Device-level interoperability

## Application-Level Interoperability Test

The application-level interoperability test ensures that applications such as backup/restore, LAN-free back-up, serverless backup, and server clustering will run as designed on a combinations of hardware components that are representative of customer configurations. At this level, the hardware configurations are, for the most part, complex and can involve numerous devices that differ by type, vendor and operating system. Since the objective of this test is to determine the feasibility of typical customer SAN solutions, not every function of the application can be tested. While the application-level interoperability test addresses the major functions of the application, successful completion of the test does not guarantee full interoperability. However, it does provide a reasonably high level of confidence that the application will function well in most SAN solution scenarios.

## Device-Level Interoperability

The device-level and system integration test verifies functionality of the device with additional hardware and software. The interoperability and system integration test ensures conformance with the ANSI Fibre Channel (FC) standards and interoperability between servers and storage.

### Server Interoperability

This ensures there are no problems between the HBA and the server. Potential problems, which may be found in this testing, include incompatibility between the HBA and server PCI chipsets, and conflicts between the HBA driver/BIOS setting and drivers/BIOS setting of other installed devices/adapters in the server.

### Storage Interoperability

Storage devices such as disk arrays and tape devices are tested with SAN hardware and HBAs. This ensures compatibility between the end device and SAN hardware. Potential problems that may be found include improper LIP handling, AL\_PA and Worldwide Name problems, jitter, and so on.

### Application Device-Level Interoperability

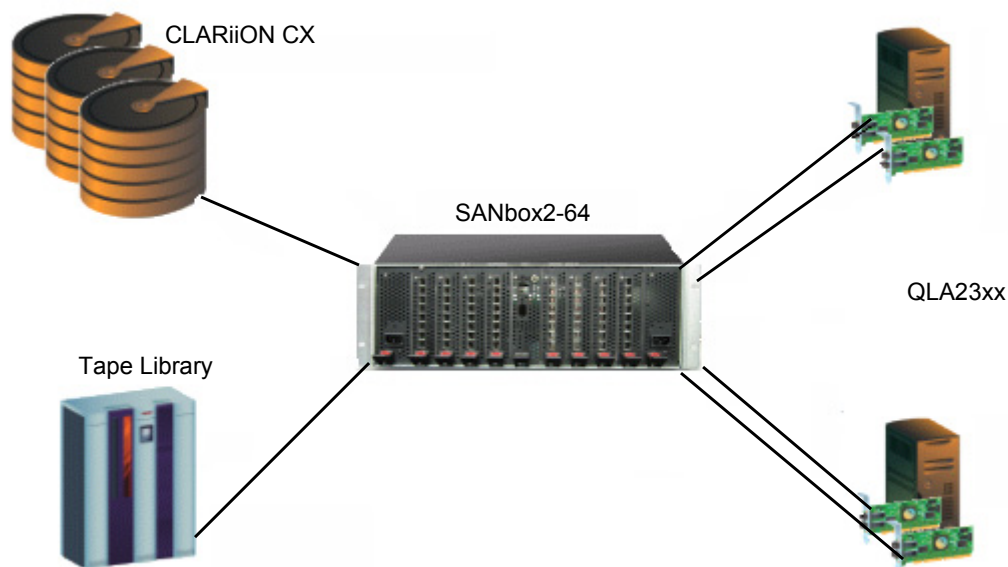
The application device-level interoperability test ensures coexistence with the operating system environment and typical user shrink-wrapped software. It also ensures that the software works with the applicable hardware. In the case of a Windows environment, the component should have successfully completed all applicable Microsoft Hardware Certification program tests.

## Tested SAN Configurations

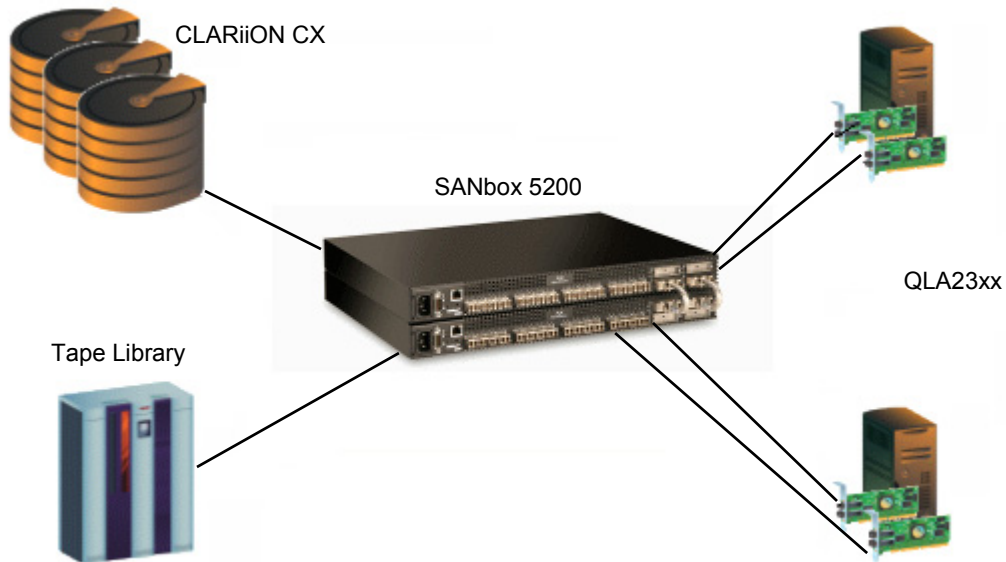
The following SAN illustrations show several different configurations and components certified by QLogic. Your configuration details may differ.

**NOTE:** For information on multi-vendor switch configuration, please see the *Switch Interoperability Guide* at <http://www.qlogic.com/interopguide>.

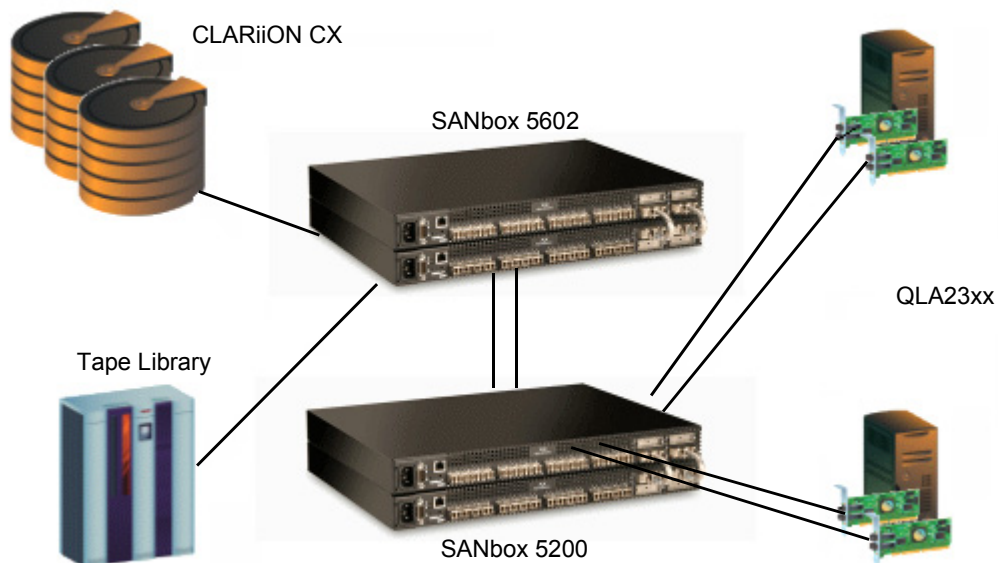
### Single-Switch Configuration: SANbox2-64



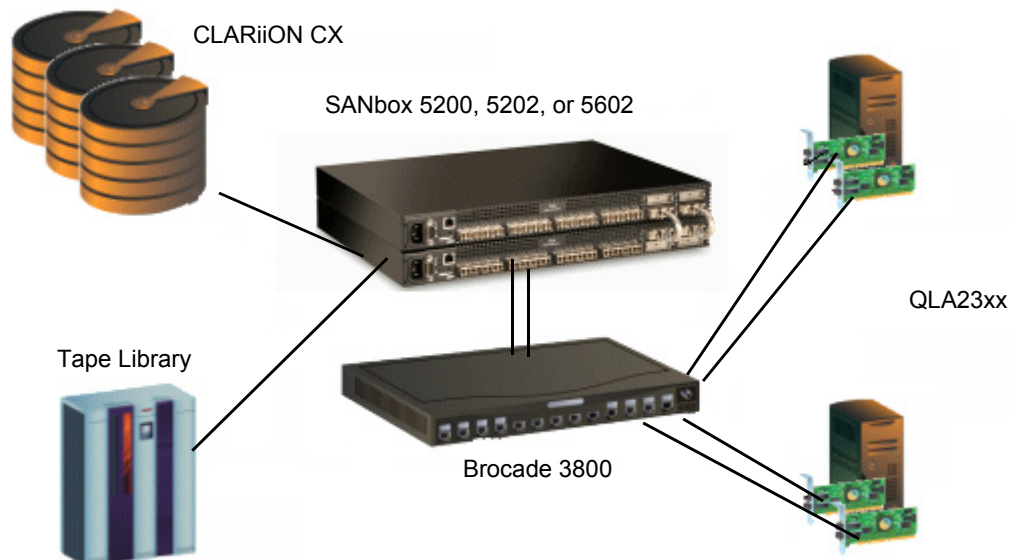
## Cascade Configuration: SANbox 5200



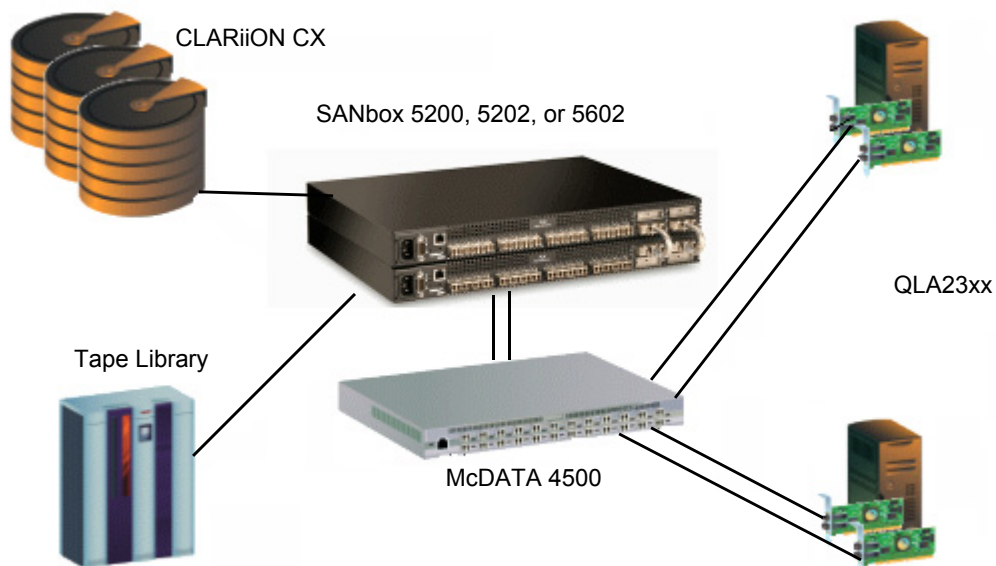
## Cascade Configuration: SANbox 5602 and SANbox 5200



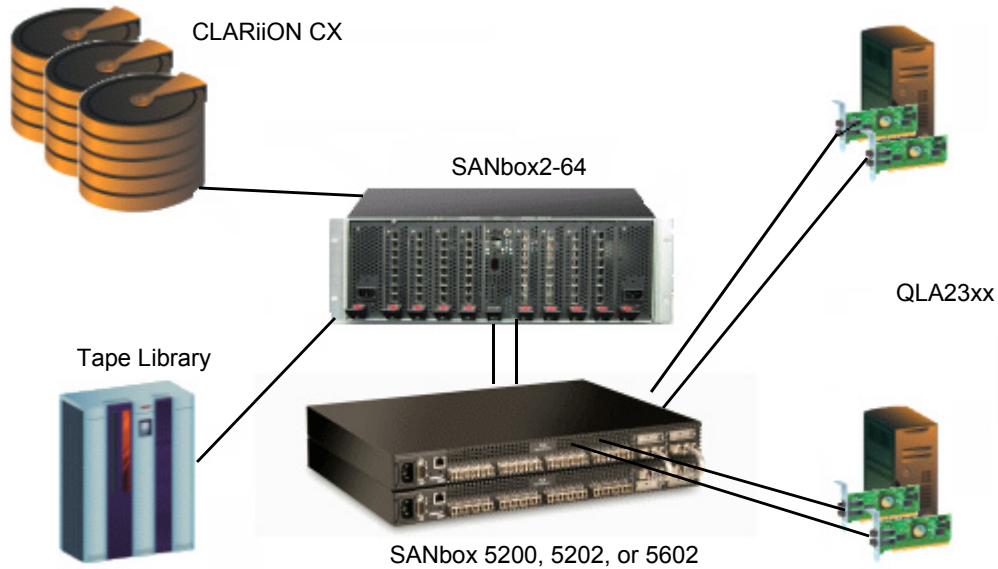
## Cascade Configuration: SANbox 5000 Series and Brocade 3800



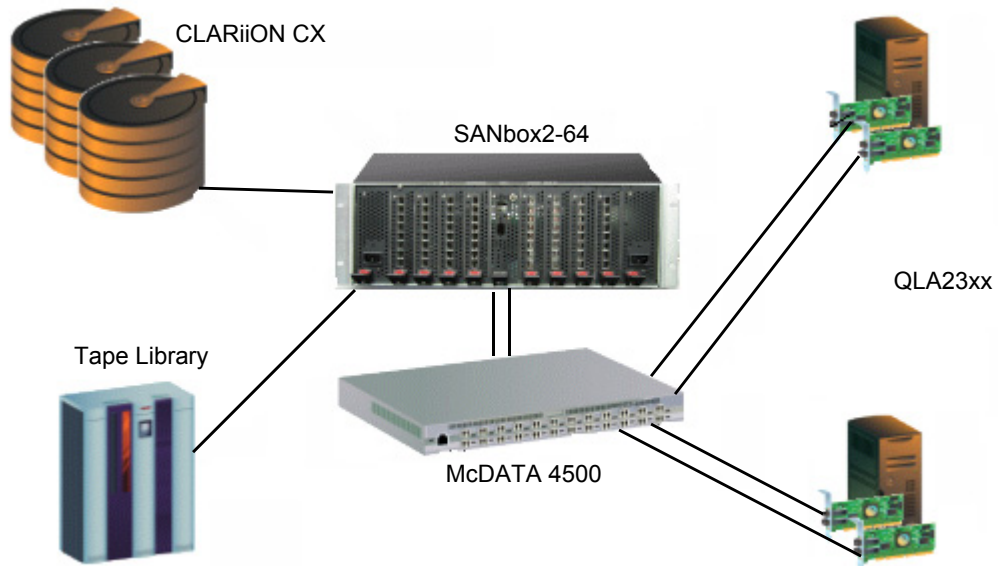
## Cascade Configuration: SANbox 5000 Series and McDATA 4500



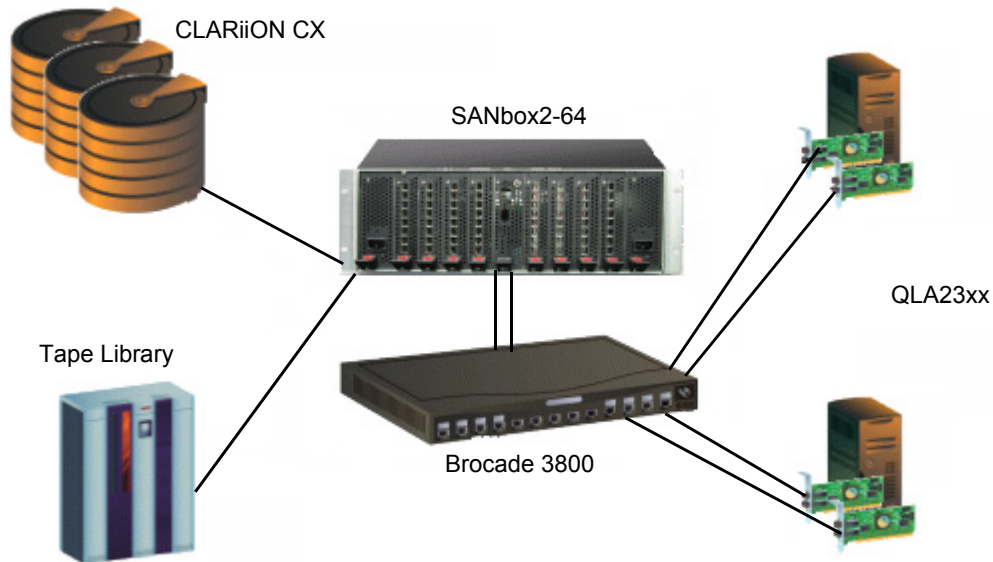
## Cascade Configuration: SANbox 5000 Series and SANbox2-64



## Cascade Configuration: SANbox2-64 and McDATA 4500



## Cascade Configuration: SANbox2-64 and Brocade 3800





## Statement of Support

QLogic understands the unique needs and complexities of each and every SAN. As a result, the QLogic SANtrack™ Service and Support Program provides customers with a flexible way to create a unique service and support package designed specifically to meet your distinct business requirements.

QLogic switch products allow a wide range of organizations to exploit the power of a SAN. Whether it's a fast growing small firm implementing a network with 10-20 devices or a Fortune 100 Corporation creating a large infrastructure with thousands of devices, QLogic SANtrack Service and Support Program effectively addresses either set of business requirements.

The SANtrack Service and Support Program is a diverse offering of a range of services including: Select and Prime service plans, Pre-Install Analysis, Installation, On-Site and Spare Upgrades. Customers may choose among the services that best meet the demands of their business. Most importantly, customers are assured complete satisfaction since QLogic and its qualified partners fully guarantee all products and services.

**NOTE:** For additional information on support, please see the QLogic website at:  
[http://www.qlogic.com/support/warranty\\_santrack.asp](http://www.qlogic.com/support/warranty_santrack.asp).



## Driver and Firmware Levels

The following driver and firmware levels were used during QLogic certification testing. As new levels of software are released, they will be supported. See the QLogic website for the latest drivers, software, and manuals: [http://www.qlogic.com/support/drivers\\_software.asp](http://www.qlogic.com/support/drivers_software.asp).

### QLogic SANblade HBAs

Model	Windows 2000	Windows 2003 (SCSI 32-bit)	Windows 2003 (stor 32-bit)	Red Hat 3.0 (32-bit)	BIOS
QLA2310	9.0.1.12 or above	9.0.1.12 or above	9.0.1.17 or above	7.03.00 or above	1.43 or above
QLA2340	9.0.1.12 or above	9.0.1.12 or above	9.0.1.17 or above	7.03.00 or above	1.43 or above
QLA2342	9.0.1.12 or above	9.0.1.12 or above	9.0.1.17 or above	7.03.00 or above	1.43 or above

### Switches

Manufacturer	Model	Firmware	SANsurfer
QLogic	SANbox 5602	5.x or above	5.x or above
QLogic	SANbox 5202	5.x or above	5.x or above
QLogic	SANbox 5200	5.x or above	5.x or above
QLogic	SANbox2-64	5.x or above	5.x or above
McDATA	See the <i>QLogic Switch Interoperability Guide</i> for information on supported McDATA switches.		
Brocade	See the <i>QLogic Switch Interoperability Guide</i> for information on supported Brocade switches.		

### EMC CLARiiON Storage

Model	Firmware
CLARiiON CX200	02.04.1.20.5.002 or above
CLARiiON CX400	02.02.1.40.5.006 or above
CLARiiON CX600	02.02.1.40.5.006 or above

### Application Software

Application	Vendor	Version
SANsurfer™ Management Suite CD	QLogic	4.x or above

Application	Vendor	Version
Navisphere	EMC	6.5.0.3.3 or above

## Operating Systems

Operating System	Version	Service Pack/Patch
Microsoft Windows	2000 Server	SP3 or above
Microsoft Windows	2003 Server	none
Red Hat	Enterprise Linux 3.0	none

# SAN Setup and Configuration

The following section of the *QLogic SAN Configuration Guide for CLARiiON Storage* provides instructions to set up and configure your storage, servers, and storage network. Once you have completed these steps, additional procedures illustrate how to connect the host and storage ports to the networks and how to validate your storage network connections.

In most cases, the SAN setup and configuration proceeds in this order:

1. [Server Configuration](#)
2. [Storage Configuration](#)
3. [Storage Network Configuration](#)

## Server Configuration

This section walks you through the steps needed to ready your server for connection to the storage network, including information on:

- Fibre Channel HBAs from QLogic
- Installing and configuring HBA drivers
- Installing the HBA and switch device management application (SANsurfer Management Suite)
- Configuring the HBA with appropriate settings

Once you have completed the steps in this section, you can continue to set up the storage network and connect the server to the fabric.

## Fibre Channel HBAs Overview

The award-winning QLogic SANblade 2300 Series Fibre Channel HBAs offer 2Gb performance for demanding SANs and are available in PCI-X form factor, which is backwards compatible to PCI. QLogic SANblade HBAs are the industry's highest-performing and most widely deployed host adapter solutions for server, networking, storage and clustering solutions.

The SANblade 2300 Series architecture is the result of more than 15 years of progressive development and testing. The QLogic proven architecture delivers higher overall reliability and enables advanced functionality with its single chip integration, placing QLogic years ahead of its competitors. The SANblade 2300 also has proven interoperability with all major software applications, hardware platforms and operating systems.

The QLogic QLA23xx HBAs tested with the CLARiiON storage systems are:

- QLA234x
- QLA2310

## Assumptions

The following procedures assume that:

- You have installed the HBA device into the system according to specifications in the hardware installation guide provided with the HBA. For more information, see the SANblade user manual at: [http://www.qlogic.com/support/home\\_resources.asp?id=76](http://www.qlogic.com/support/home_resources.asp?id=76).
- Your operating system and appropriate patches have been installed to meet the software and driver requirements for all components. For more information, see "Driver and Firmware Levels" on page 19.

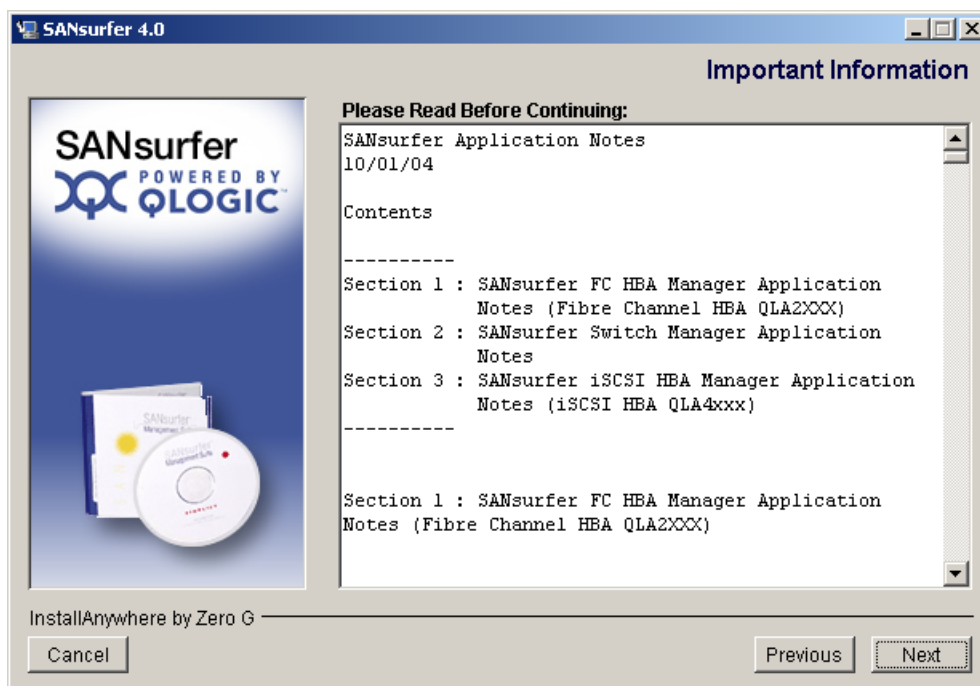
To complete the server configuration, refer to these sections:

- [Installing SANsurfer Management Suite](#)
- [Configuring the Server on Windows](#)
- [Configuring the Server on Red Hat](#)

## Installing SANsurfer Management Suite

To install the SANsurfer Management Suite, follow these steps:

1. Download the latest version from the Download section of the QLogic website ([http://www.qlogic.com/support/drivers\\_software.asp](http://www.qlogic.com/support/drivers_software.asp)) and double click the icon to start the installation.
2. When the Introduction dialog displays, click **Next**.
3. Read the **Application Notes** carefully and click **Next** when you're ready:



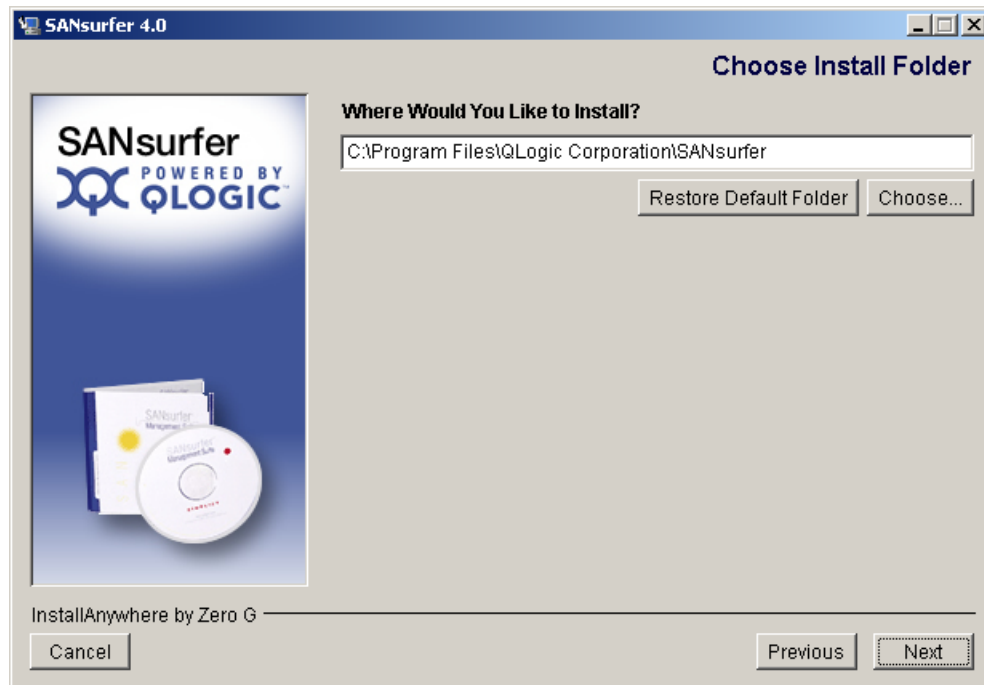
4. Select **ALL GUIs and ALL Agents** and click **Next**.





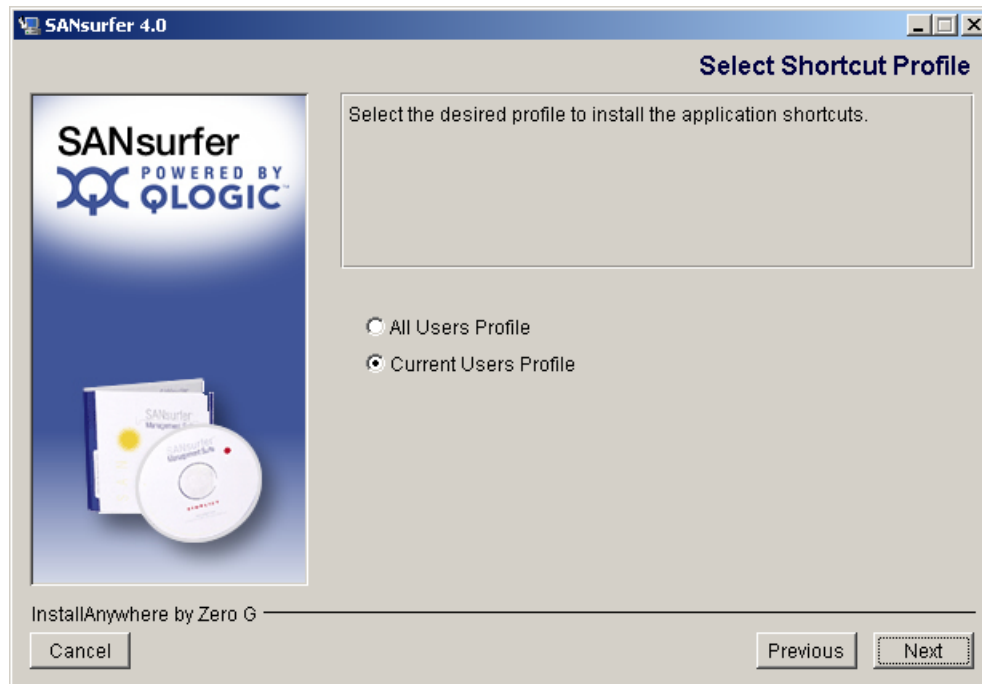
5. Edit the path where you want to install the software or click **Choose** and browse to the location. Click **Next**:

b

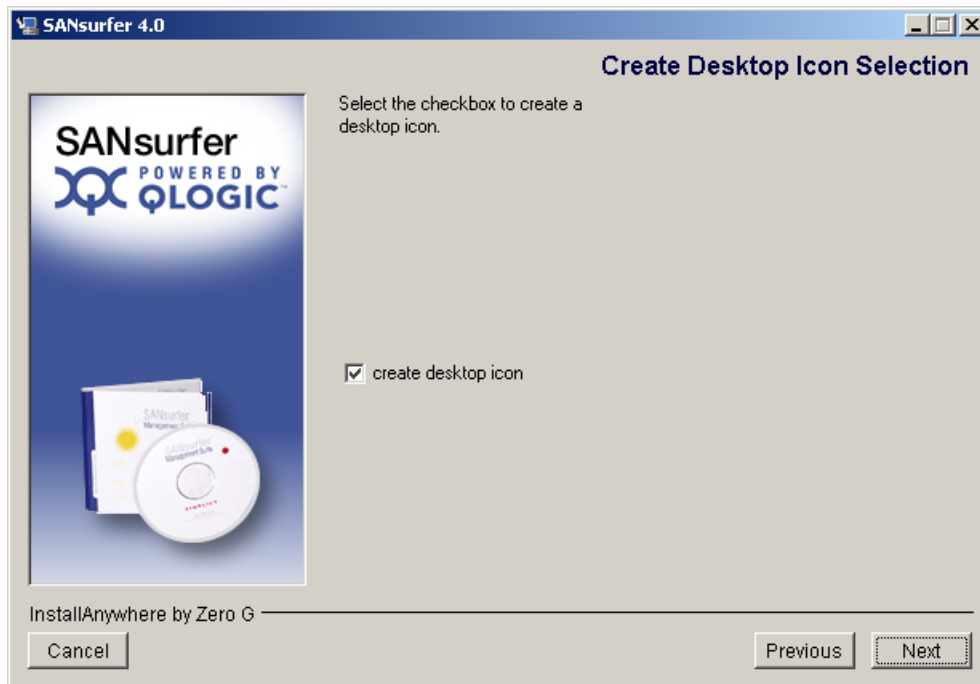


If you are installing on Red Hat, proceed to step 8.

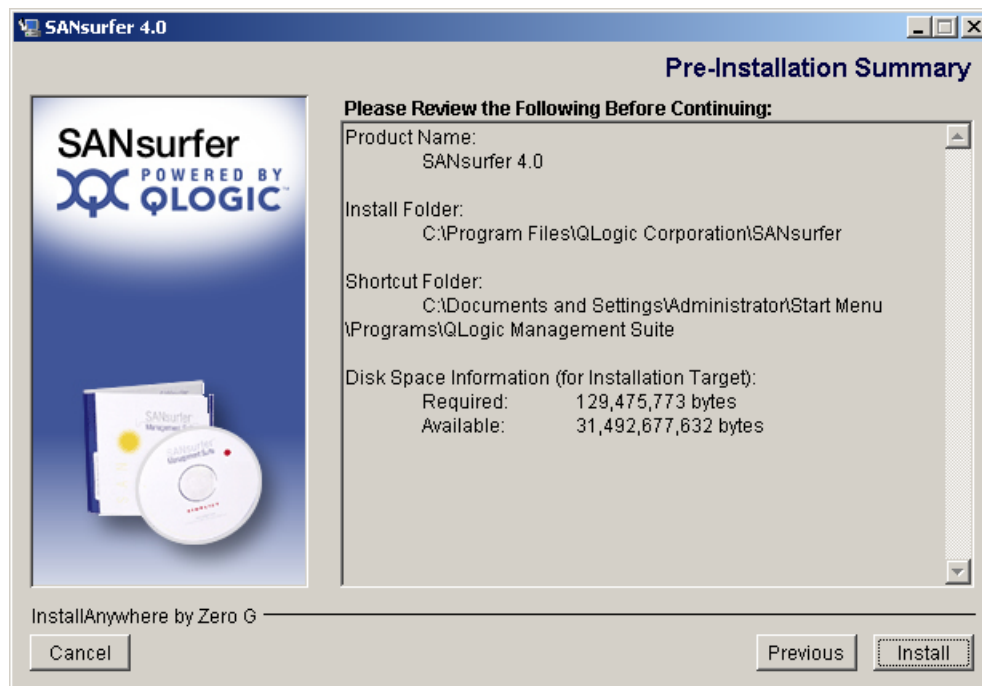
6. On Windows only, select the **Shortcut Profile** you wish to use and click **Next**:



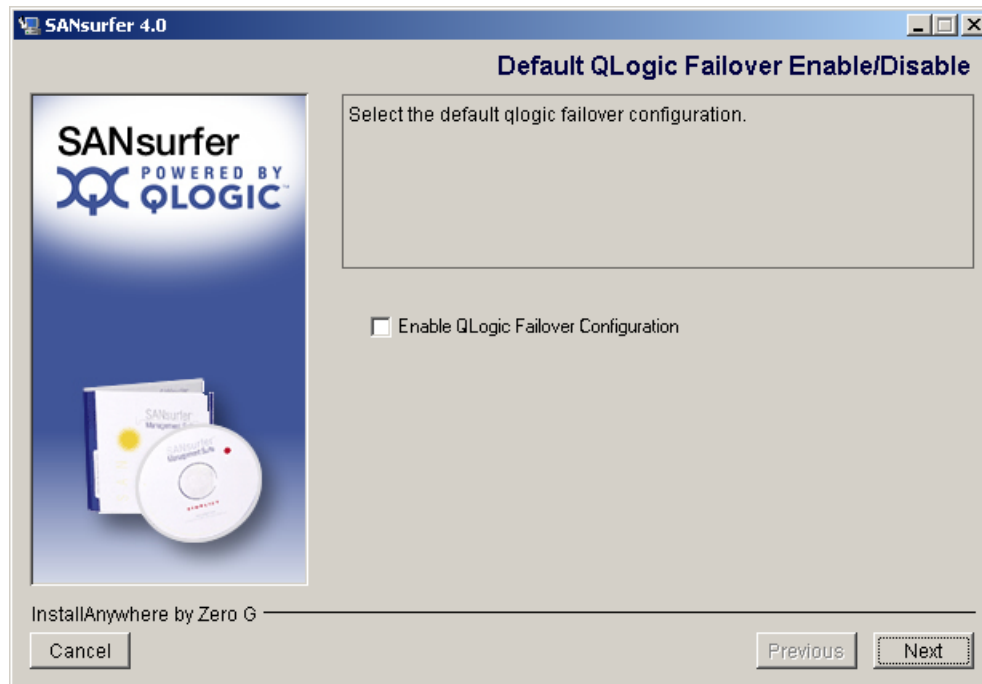
7. On Windows only, check **create desktop icon** if you wish, and click **Next**:



8. Review the Pre-Installation Summary and click **Install** when you're ready:



9. When the Default QLogic Failover Enable/Disable dialog box displays, click **Next**.



**NOTE:** This feature may be enabled through SANsurfer at a later date.

10. Click **Done** when the installation process completes.

## Configuring the Server on Windows

The following sections illustrate how to perform the server configuration tasks on Windows:

- [Installing the Windows Driver](#)
- [Configuring the HBA](#)

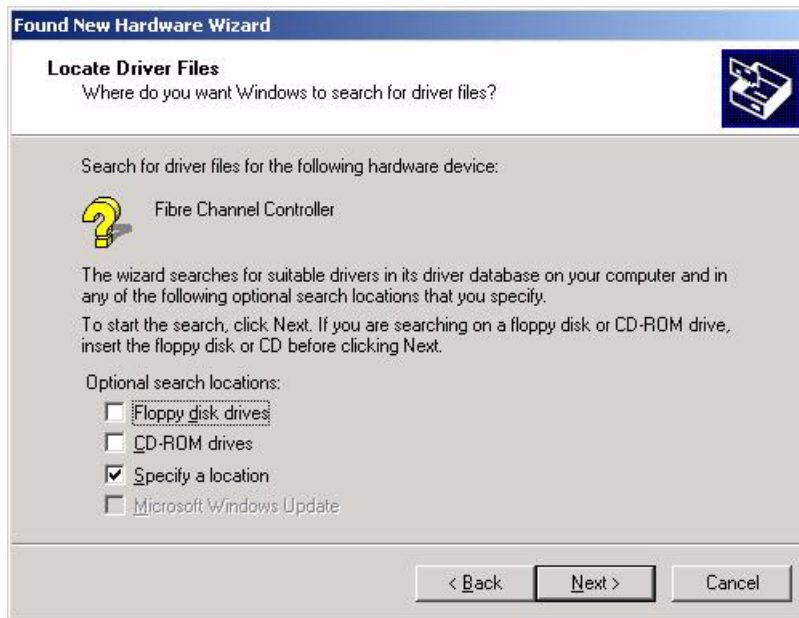
### Installing the Windows Driver

The QLA23xx HBAs are plug-and-play devices automatically detected by Windows.

1. Download the latest driver from the **Download** section of the QLogic website ([http://www.qlogic.com/support/drivers\\_software.asp](http://www.qlogic.com/support/drivers_software.asp)) and extract them.
2. Windows detects the newly installed device, then displays the Found New Hardware Wizard message. Click **Next** to begin the driver installation.
3. When prompted, select **Search for a suitable driver for my device (recommended)** and click **Next**.



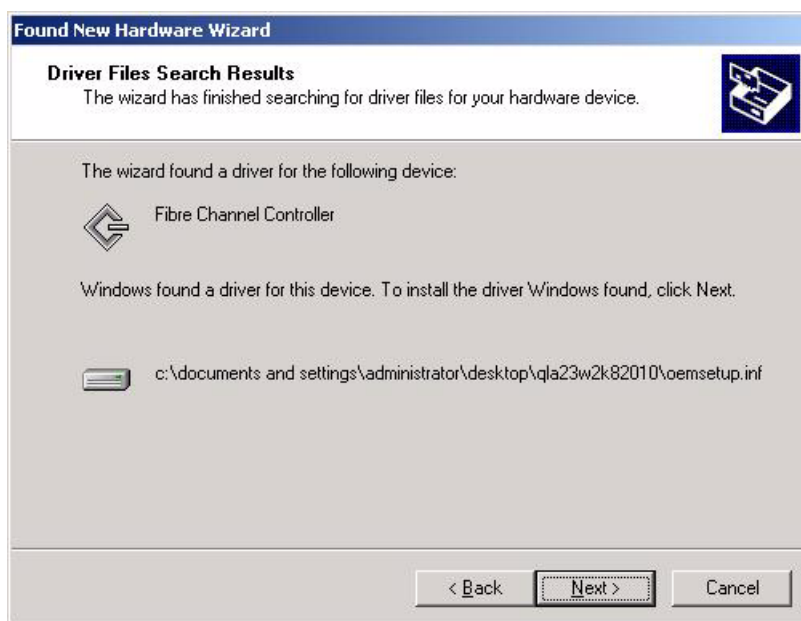
4. Check **Specify a location** and click **Next**:



5. Browse to the directory containing the driver and click **OK**:



6. When the **Driver Files Search Results** display, click **Next**:



7. Click **Finish** to complete the installation.

### Windows 2000 HBA Pseudo LUN Driver

For Windows 2000 only, you must also install the pseudo LUN driver. Windows 2000 detects the newly installed device automatically.

1. Click **Next** to begin the driver installation from the Found New Hardware Wizard message.
2. When prompted, select **Search for a suitable driver for my device (recommended)** and click **Next**.
3. Check **Specify a location** and click **Next**.
4. Browse to the directory containing the driver and click **OK**.



5. When the **Driver Files Search Results** display, click **Next**:

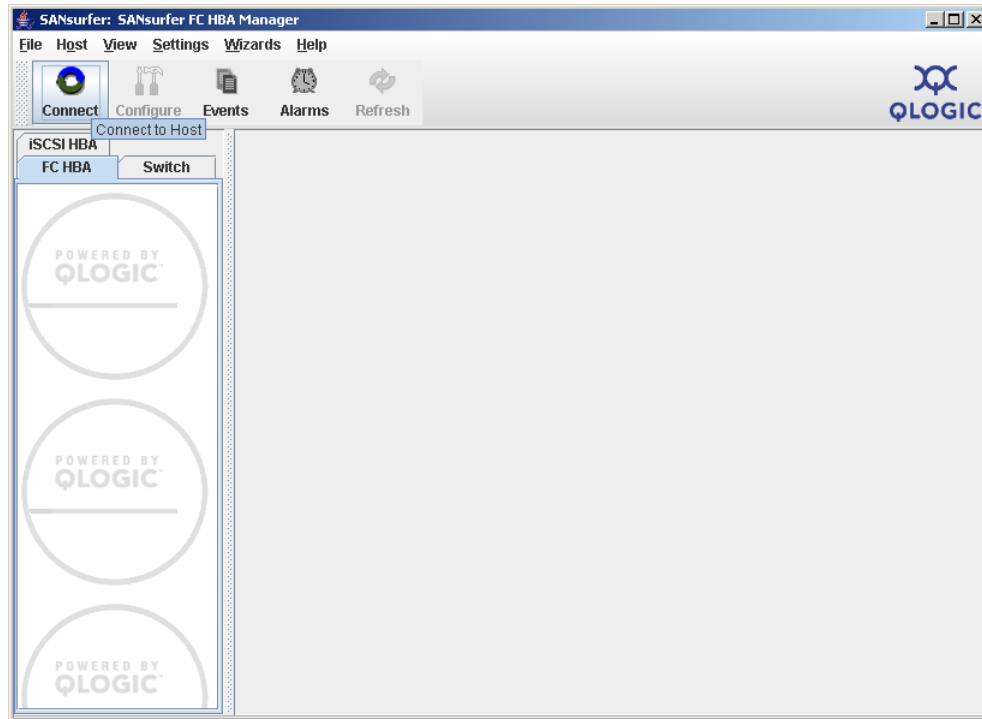


6. Click **Finish** to complete the installation.

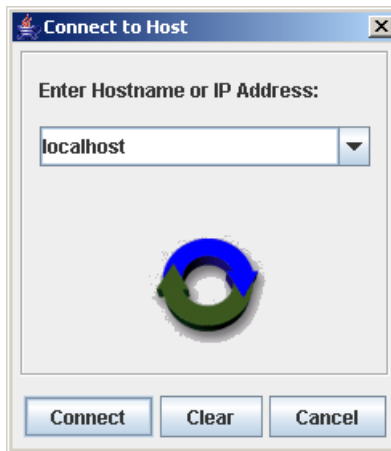
## Configuring the HBA

To configure the QLogic HBA on Windows, follow these steps:

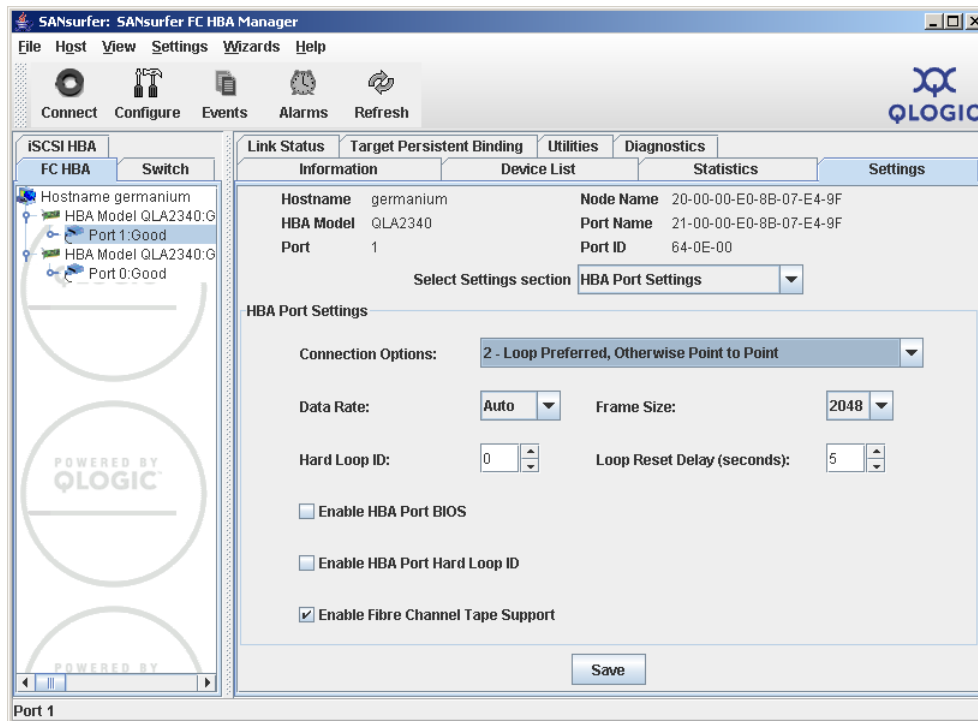
1. Launch SANsurfer.
2. From the SANsurfer FC HBA Manager, click **Connect** on the toolbar:



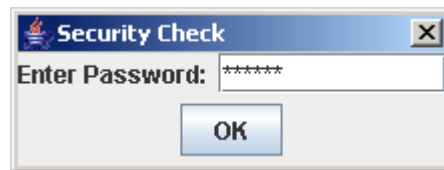
3. From the **Connect to Host** dialog, select the host from the list and click **Connect**:



4. From the SANsurfer FC HBA Manager window:
  - a. Select the port to configure from the FC HBA list on the left.
  - b. Click the **Settings** tab on the right.
  - c. Select the desired port settings.
  - d. Click **Save**.

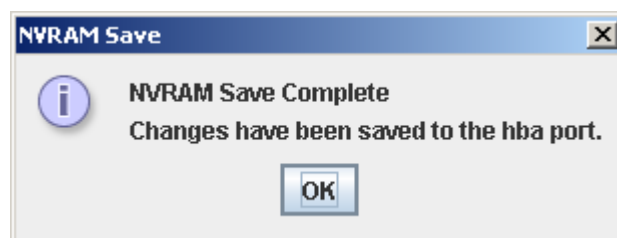


5. Enter the **Password** in the Security Check dialog box:



**NOTE:** The default password is "config". Contact your System Administrator if the password was changed.

6. Click **OK** to close the NVRAM Save confirmation message.



## Configuring the Server on Red Hat

The following sections describe how to configure the server on Red Hat:

- Installing the Red Hat Driver
- Configuring the HBA

### Installing the Red Hat Driver

To install the Red Hat driver, follow these steps:

1. Download the latest driver from the **Download** section of the QLogic website ([http://www.qlogic.com/support/drivers\\_software.asp](http://www.qlogic.com/support/drivers_software.asp)) and extract them.

2. Verify that you have the kernel source package installed:

```
[root@localhost qlogic]# rpm -qa |grep kernel-source
```

3. Uncompress and extract the distribution file:

```
[root@localhost qlogic]# tar zxvf qla2x00-v7.03.00-dist.tgz
```

4. Change to the directory where you extracted the distribution file:

```
[root@localhost qlogic]# cd qlogic
```

5. Execute the "drvinstall" script to extract the driver:

```
[root@localhost qlogic]# ./drvinstall
```

6. Compile the driver and copy it to the correct system location:

```
[root@localhost qlogic]# make qla2300.o install
```

and add "SMP=1" for multiple processor systems. For example:

```
[root@localhost qlogic]# make qla2300.o install SMP=1
```

7. Load the driver by hand:

```
[root@localhost scsi]# modprobe qla2300
```

### New RAMDISK for the Red Hat Driver

If you are using Red Hat, follow these steps to create a new RAMDISK and load the driver by default.

1. Edit **/etc/modules.conf** and add the following entries:

```
alias scsi_hostadapter# qla2300_conf
alias scsi_hostadapter# qla2300
```

where "#" is a unique number. For example:

```
alias scsi_hostadapter0 qla2300_conf
alias scsi_hostadapter1 qla2300
```

2. Change to the /boot directory:

```
[root@localhost etc]# cd /boot
```

3. Create a new RAMDISK

```
[root@localhost boot]# mkinitrd -f 2.4.21-15smp_qlogic 2.4.21-15.ELsmp
```

where **mkinitrd -f <image name> <kernel version>** is the actual image name and kernel version you are using. Be sure the image name is unique or you may overwrite an existing file.

**NOTE:** If you did not run this command in the /boot directory, copy your new image to the /boot directory.

4. Create a new entry in the bootloader to load the new RAMDISK. (We assume GRUB as it is the default for Red Hat). For example:

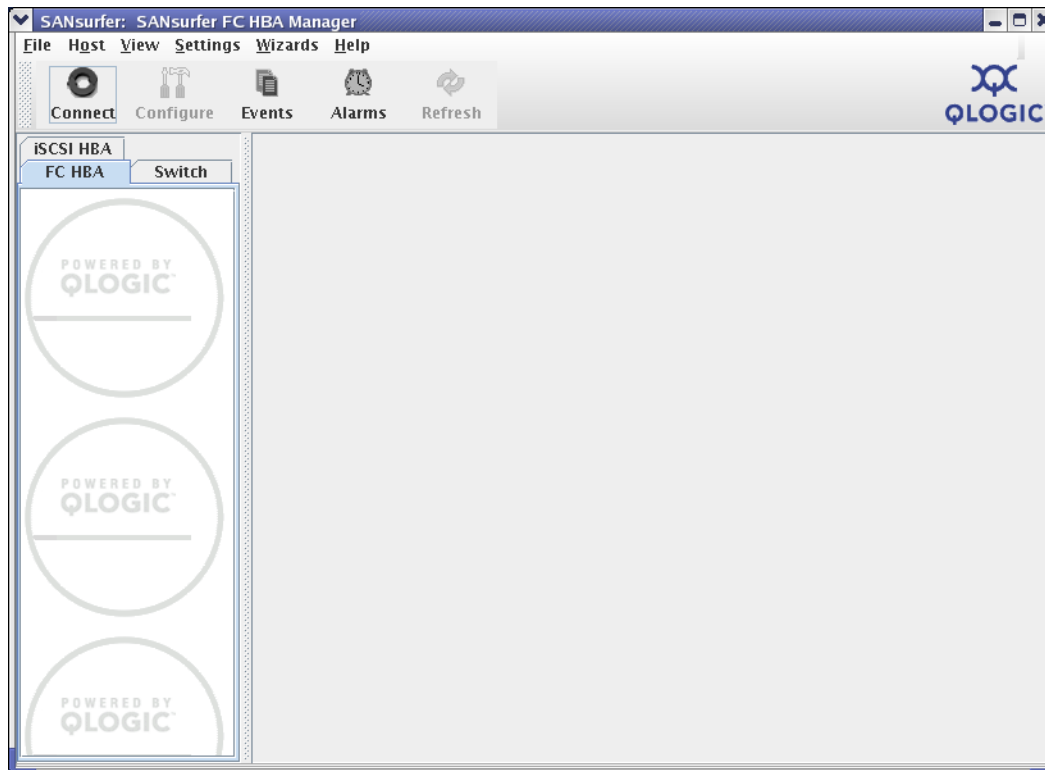
```
title Red Hat Enterprise Linux ES (2.4.21-15.ELsmp) - QLogic Driver
root (hd1,0)
kernel /boot/vmlinuz-2.4.21-15.ELsmp ro root=LABEL=/
initrd /boot/2.4.21-15smp_qlogic
```

5. Reboot the server and select the new RAMDISK.

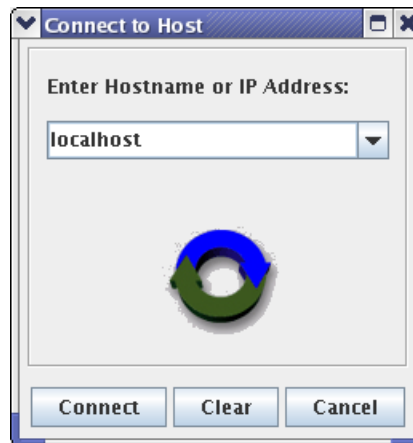
## Configuring the HBA

On Red Hat, follow these steps to configure the QLogic HBA:

1. Launch SANsurfer.
2. From the SANsurfer FC HBA Manager tab, click **Connect**:



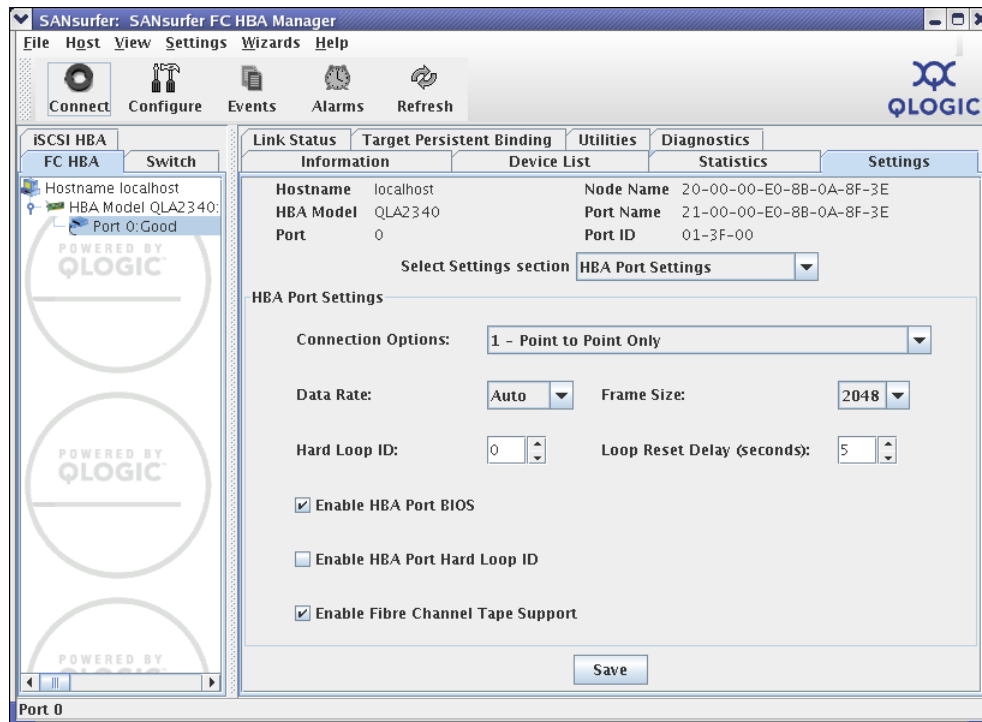
3. From the Connect to Host dialog, select the host from the list and click **Connect**.



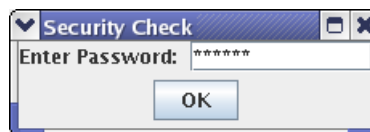
4. From the **SANsurfer FC HBA Manager** window:
  - a. Select the desired port from the tree in the left hand frame.
  - b. Click the **Settings** tab.
  - c. From the **Connection Options** list, select the connection type to use.



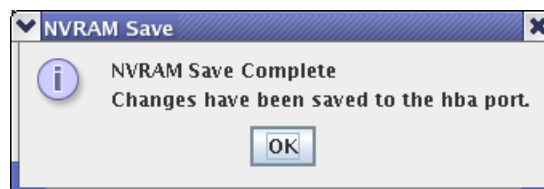
- d. Select a **Data Rate** from the list.
- e. Click **Save**.



5. Enter the password in the **Security Check** dialog box.



6. Click **OK** to the **NVRAM Save** confirmation message.





## Storage Configuration

This section outlines configuration procedures for the following CLARiiON CX storage systems tested by QLogic:

- CX200 is the next-generation entry point into the full Fibre Channel system offering workgroup consolidation.
- CX400 is a sixth-generation, full Fibre Channel network storage solution.
- CX600 is a high-end storage solution designed for high availability and consolidation.

## CLARiiON Storage Overview

CLARiiON CX systems range from the workgroup to the data center, using one architecture, one management framework, and one set of applications. The entire CX series shares the advanced, sixth-generation EMC FLARE operating environment. Learn more about CLARiiON on the EMC website at: <http://www.emc.com/products/systems/clariion.jsp>.

## Assumptions

The following procedures assume that:

- You have allocated storage space of suitable size for the application being used.
- You have created and defined a RAID group within the storage.
- Your storage system has an available port.

## Configuration Steps

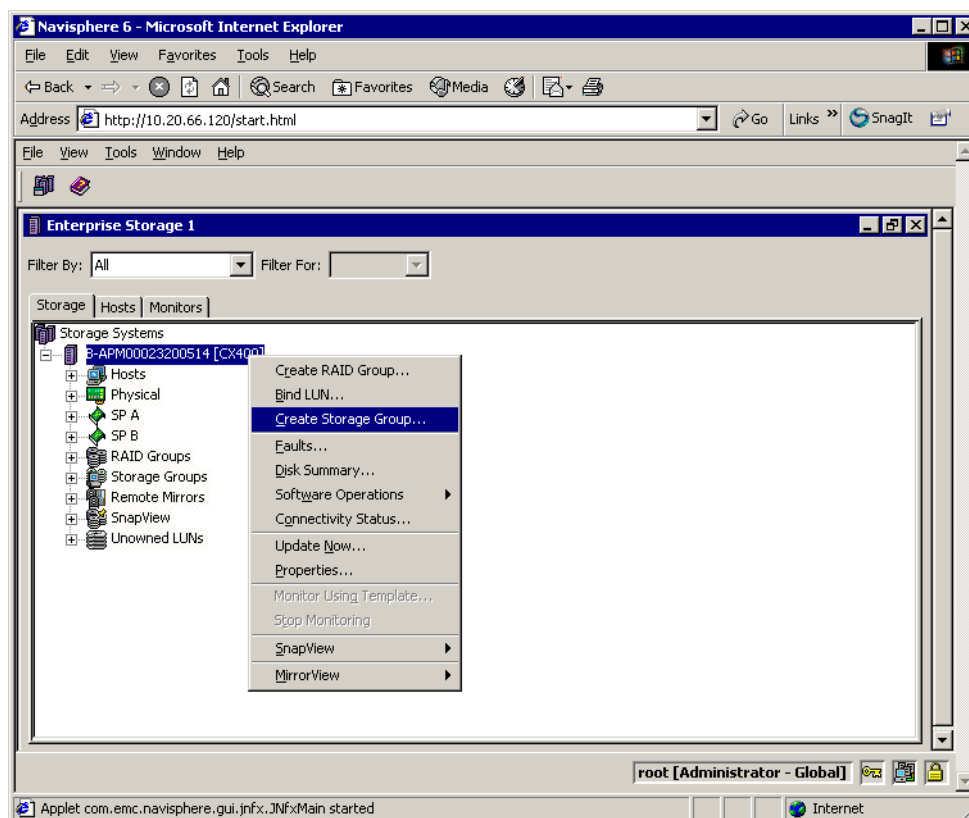
To configure the CLARiiON CX200, CX400 or CX600 model, follow the steps outlined in these procedures (illustrated using the CX400 only):

- Creating a Storage Group
- Creating a LUN
- Assigning a LUN to a Storage Group
- Registering a Host
- Assigning a Host to a Storage Group

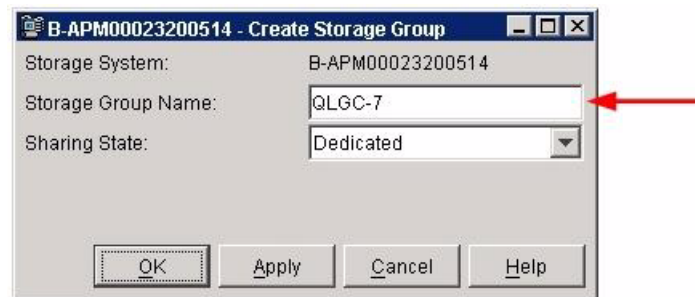
Completing these steps will prepare the allocated storage for connection to the fabric.

### Creating a Storage Group

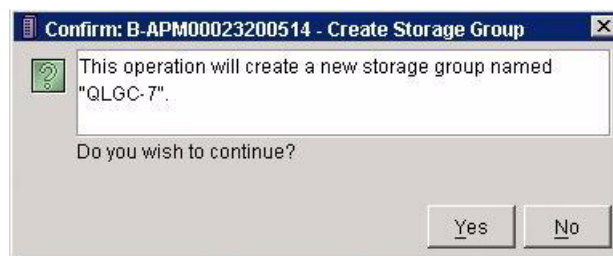
1. Launch the Navisphere application by opening a browser to the IP address of your CLARiiON system.
2. From the Enterprise Storage dialog, right click on the array icon and select **Create Storage Group** from the menu:



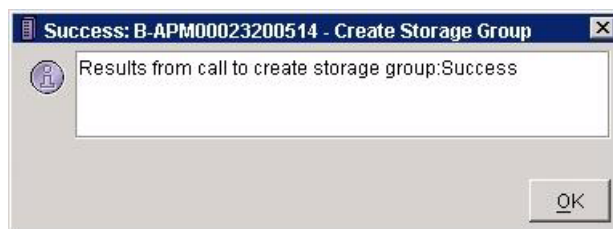
3. From the Create Storage Group dialog, edit the **Storage Group Name** and click **OK**:



4. Click **Yes** to acknowledge the confirmation message:

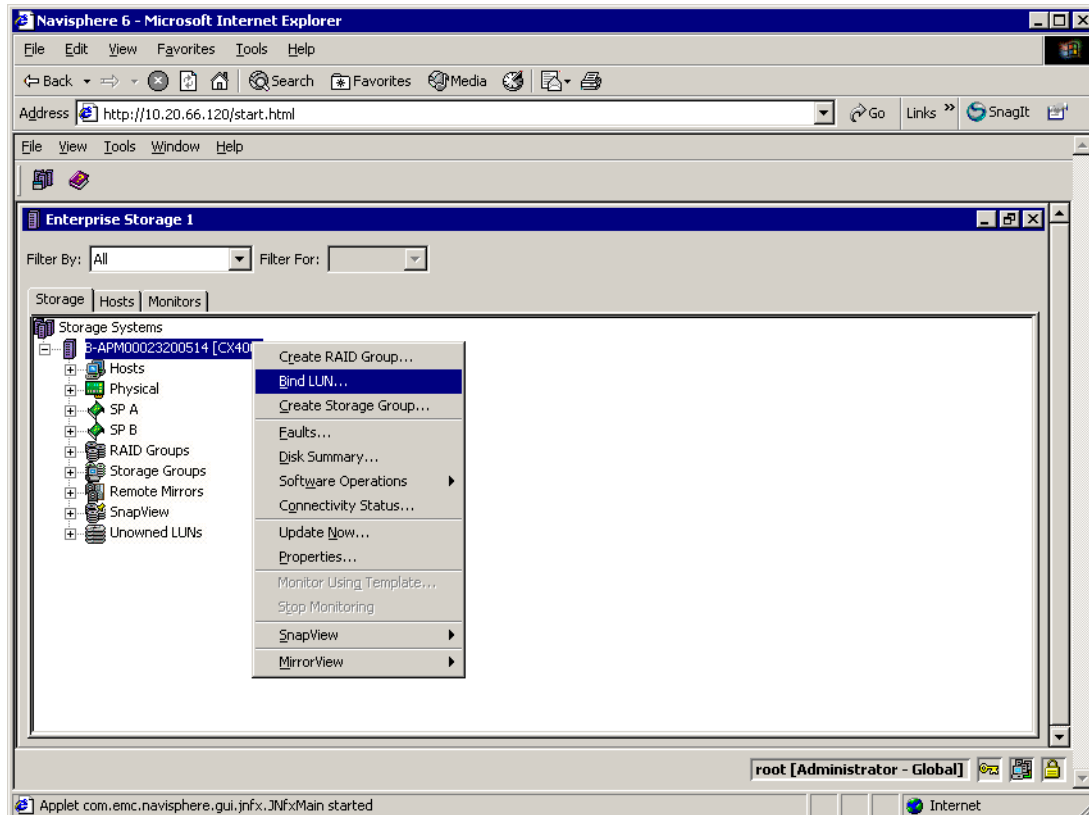


5. Click **OK** to close the status message:



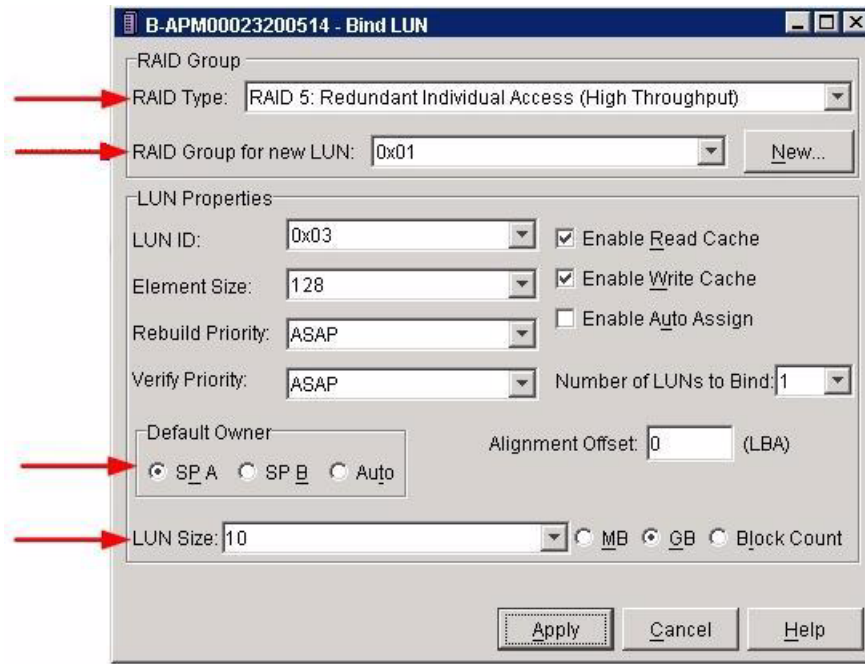
## Creating a LUN

1. From the Enterprise Storage dialog, right click on the array icon and select **Bind LUN** from the menu:

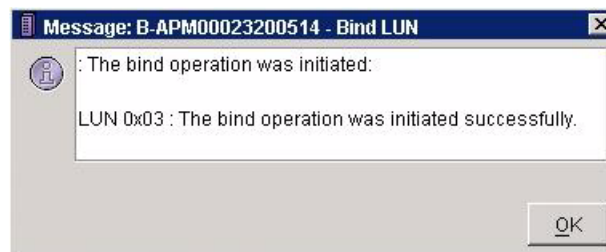


2. From the Bind LUN dialog:
  - a. Select a RAID type from the **RAID Type** list.
  - b. Select a RAID group from the **RAID Group for new LUN** list.
  - c. Select the controller to bind the LUN to in the **Default Owner** section.

- d. Select the desired **LUN Size**.
- e. Click **Apply**.



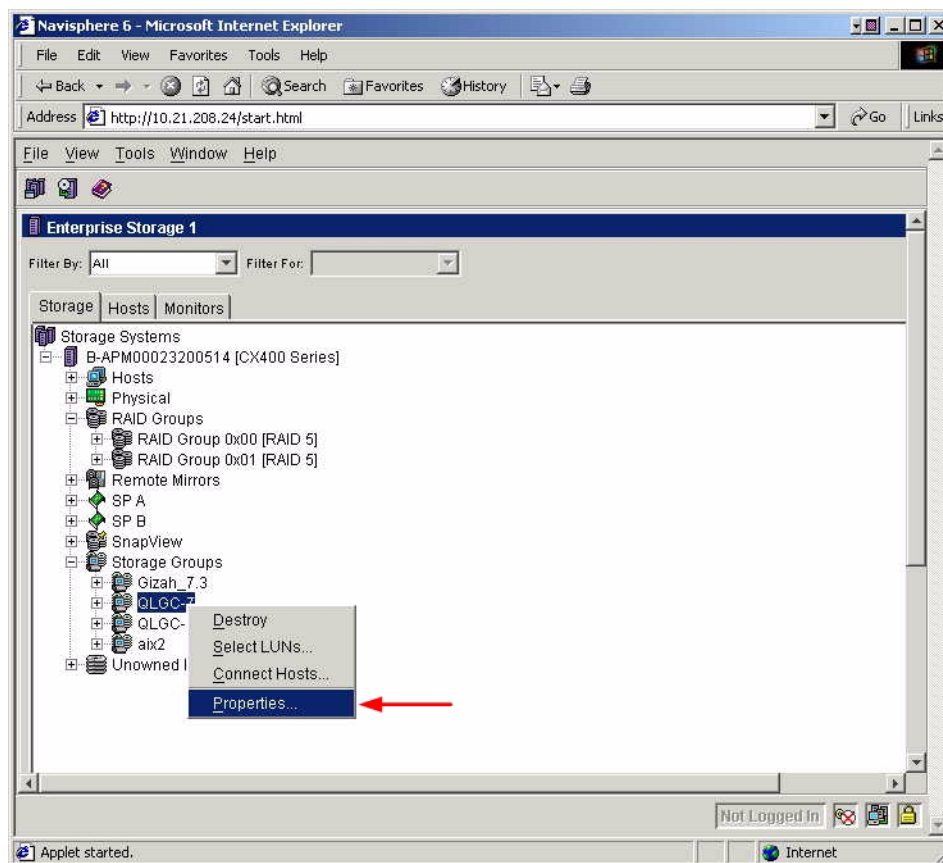
3. Click **Yes** to acknowledge the confirmation message.
4. Click **OK** to close the status message:



5. Click **Cancel** to close the Bind LUN dialog.

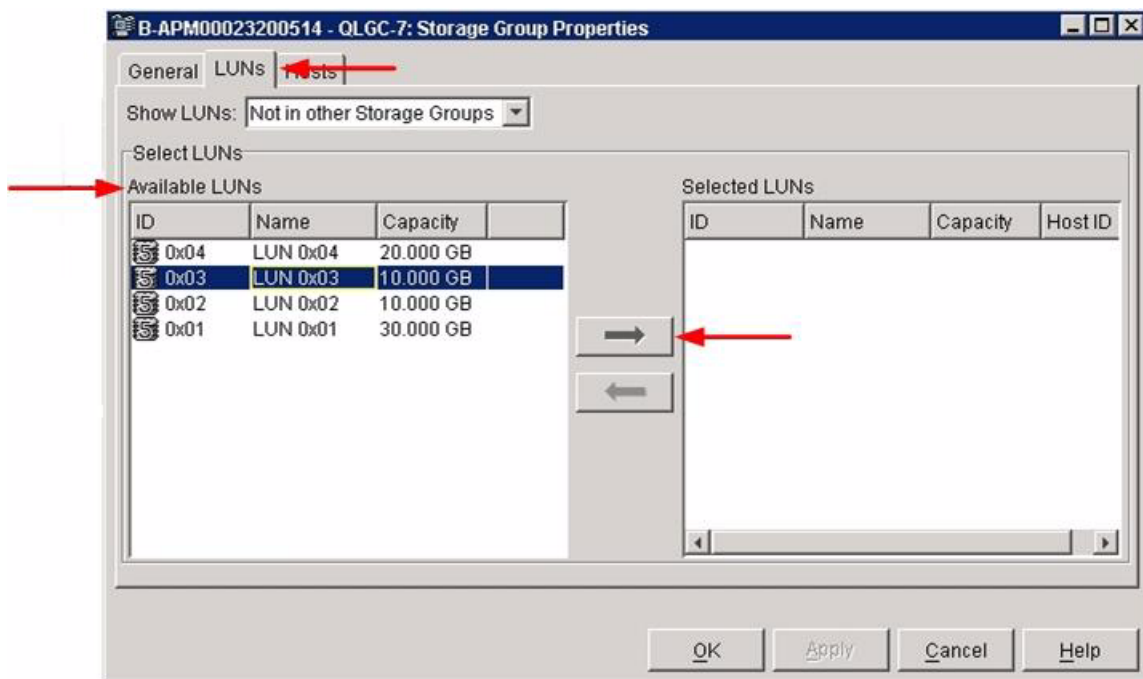
## Assigning a LUN to a Storage Group

1. From the Enterprise Storage dialog:
  - a. Expand the **Storage Groups** list.
  - b. Right click on the new storage group you created.
  - c. Select **Properties** from the menu.





2. From the Storage Group Properties dialog:
  - a. Select the **LUN** tab.
  - b. Select the LUN from the **Available LUNs** and click the **Right Arrow**.
  - c. Click **OK**.

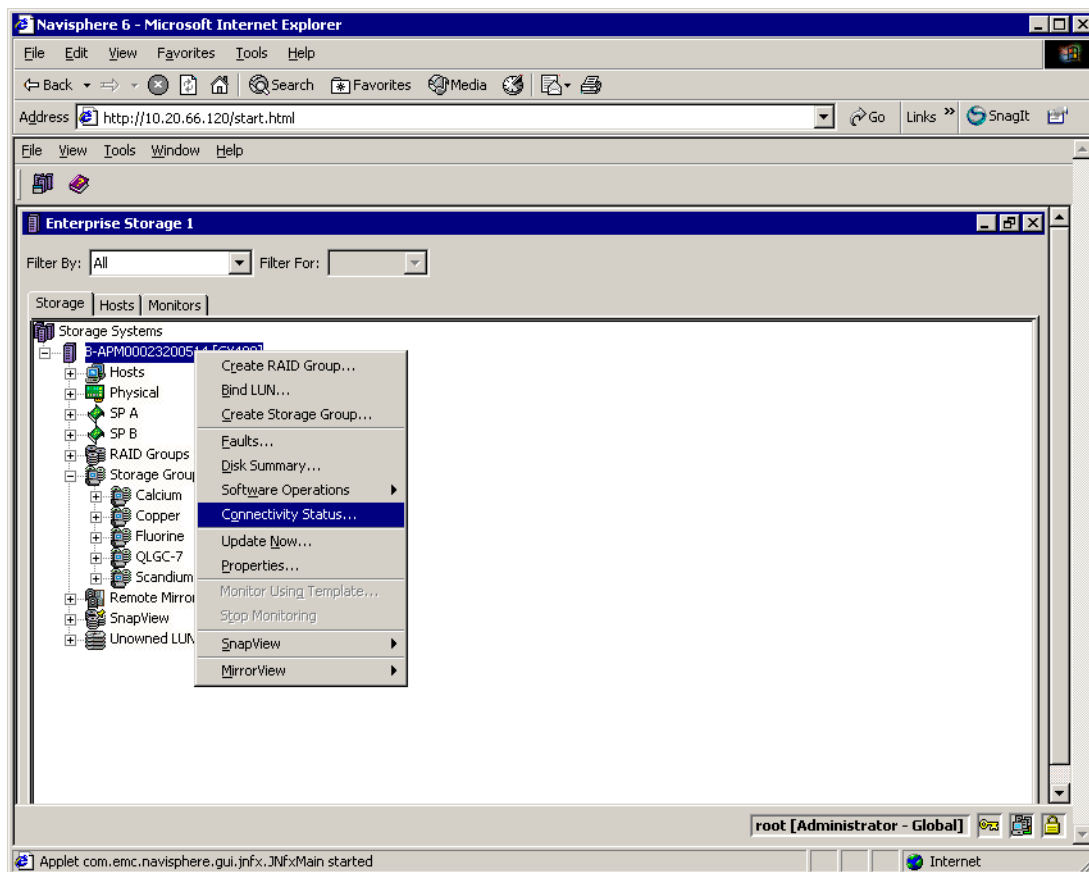


3. Click **Yes** to acknowledge the confirmation message.
4. Click **OK** to close the status message.

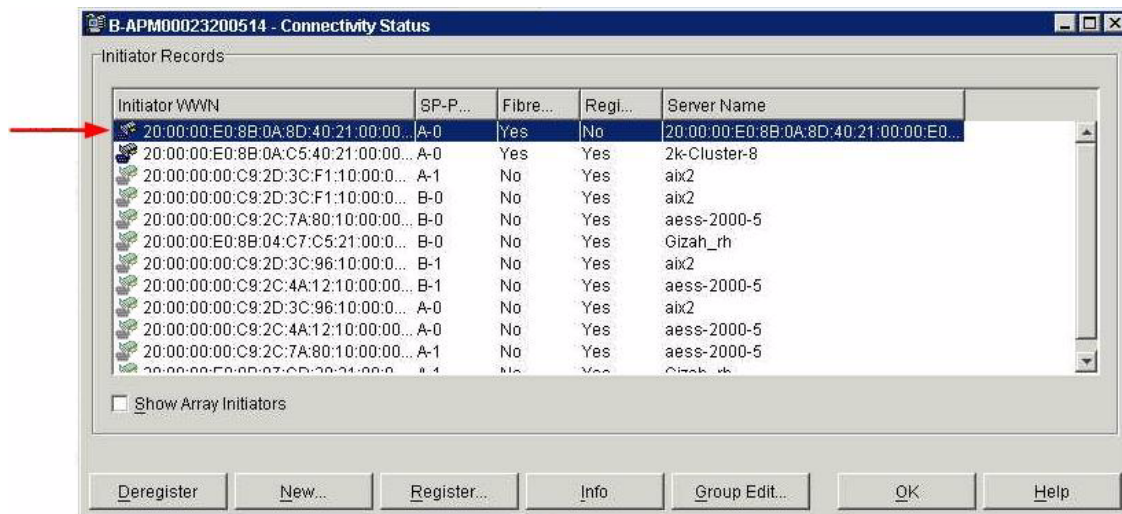
## Registering a Host

**NOTE:** To successfully register a host, your CX system must be connected to the storage network. For more information, see [“Connecting Cables” on page 87](#).

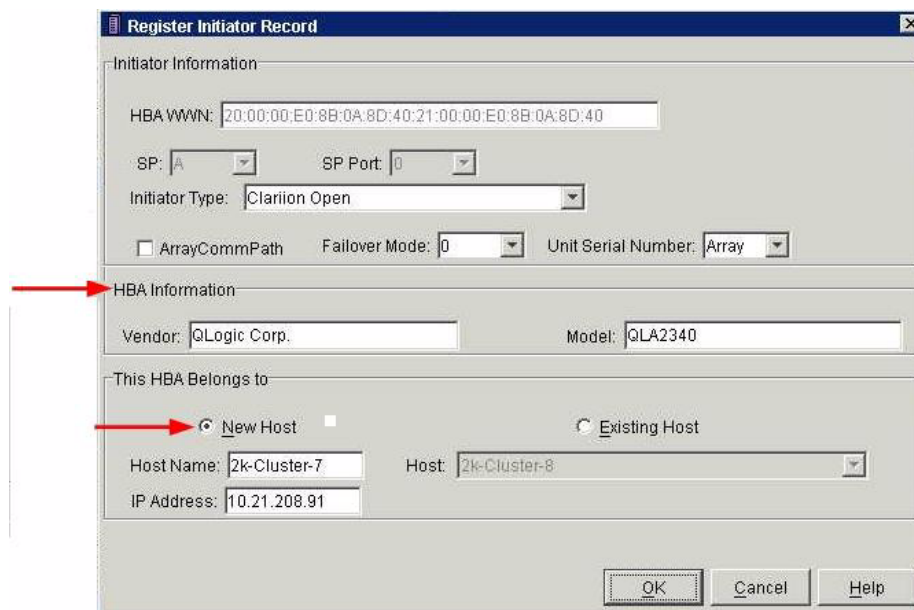
1. From the Enterprise Storage dialog box, right click on the array icon and select **Connectivity Status** from the menu:



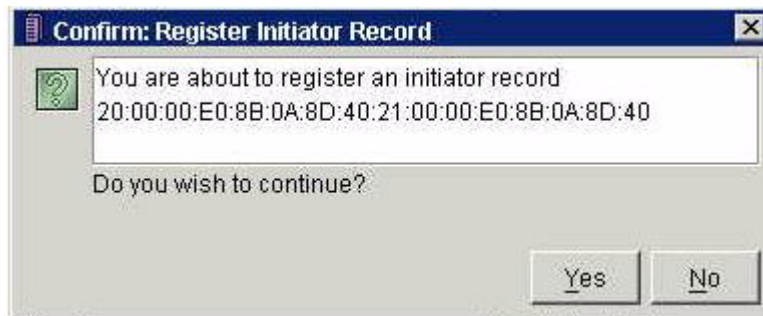
2. From the Connectivity Status dialog, select the **Initiator WWN** that matches your server and click **Register**:



3. From the Register Initiator Record dialog:
  - a. Enter the **Vendor** and **Model** of the adapter in the **HBA Information** section.
  - b. Select **New Host** in the **This HBA Belongs to** section.
  - c. Enter the **Host Name** and **IP Address** of the server.
  - d. Click **OK**.



4. Click **Yes** to acknowledge the confirmation message:

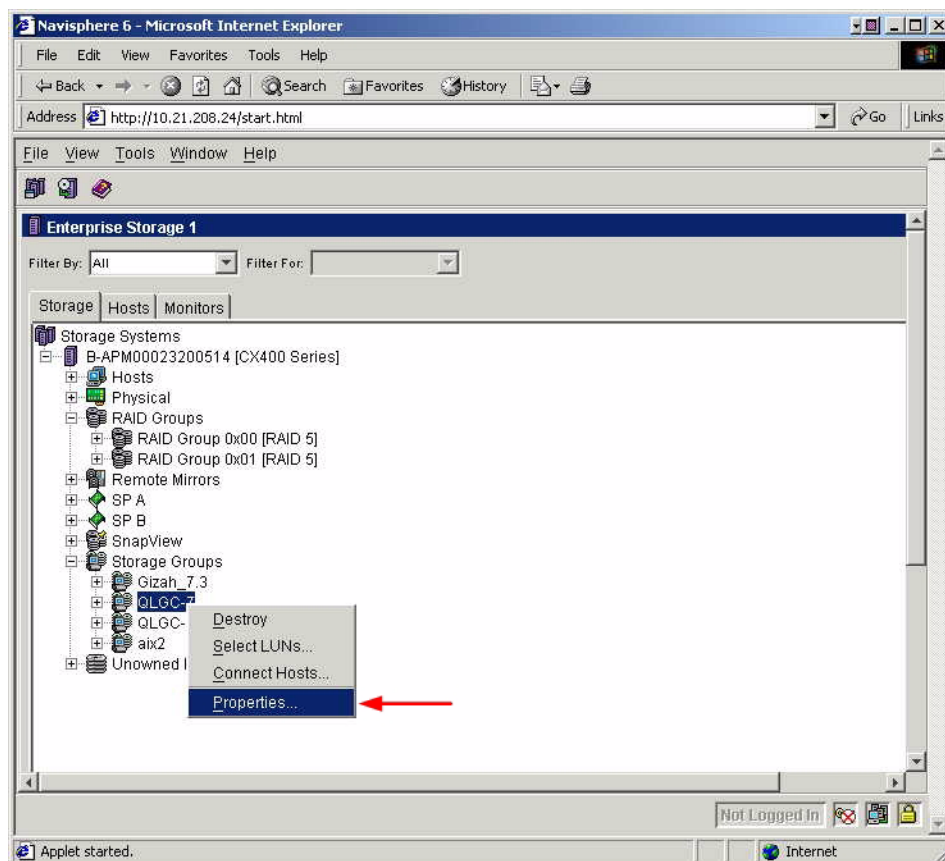


5. Click **OK** to close the status message.
6. Click **OK** to close the Connectivity Status dialog.

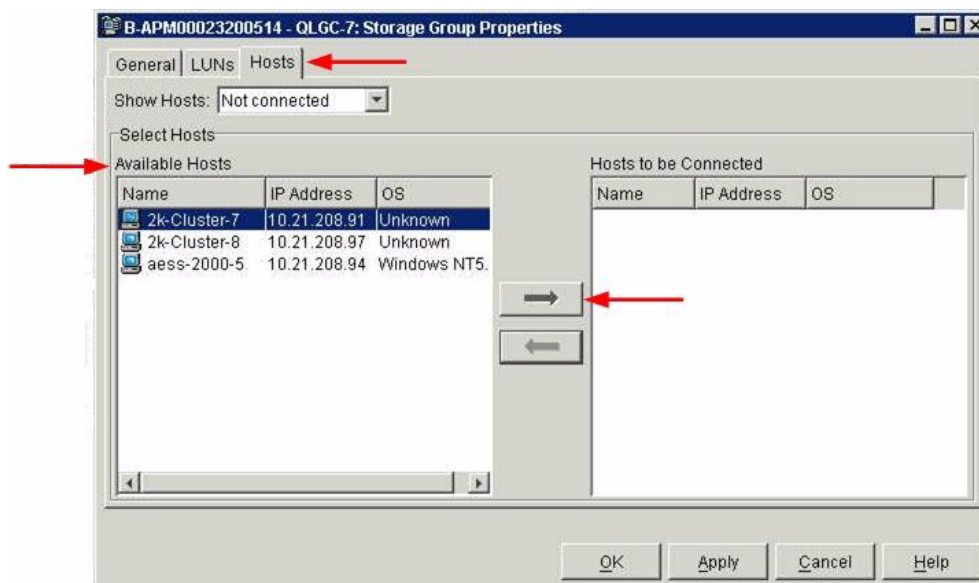
## Assigning a Host to a Storage Group

**NOTE:** To successfully assign a host to a storage group, your CX system must be connected to the network. For more information, see “Connecting Cables” on page 87.

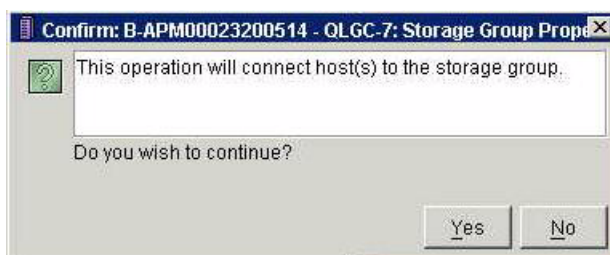
1. From the Enterprise Storage dialog:
  - a. Expand the **Storage Groups** list.
  - b. Right click on the new storage group you created.
  - c. Select **Properties** from the menu.



2. From the **Storage Group Properties** dialog:
  - a. Select the **Hosts** tab.
  - b. Select the new host you registered from the **Available Hosts** and then click the **Right Arrow**.
  - c. Click **OK**:



3. Click **Yes** to acknowledge the confirmation message:



4. Click **OK** to close the status message:



## Storage Network Configuration

This section provides instructions to set up and configure the QLogic Fibre Channel switches in the SANbox 5000 Series and the SANbox2-64. Completing the configuration steps in this section prepares the network for host and storage connections.

### Fibre Channel Switches from QLogic

Deployed as standalone units or in multi-stage fabrics of any size, QLogic SANbox switches come with all the software tools necessary to create easy-to-manage, resilient and intelligent SANs. For additional information, see [http://www.qlogic.com/products/fc\\_san\\_switchs.asp](http://www.qlogic.com/products/fc_san_switchs.asp).

#### SANbox 5000 Series Stackable Switches

The SANbox 5000 Series switches provide the same benefits as stackable IP switches for your SAN. The SANbox 5200 is the first switch in the new SANbox 5000 Series, providing the benefits of stackable IP switches for your SAN. With up to sixteen 2Gb ports plus a four-pack of high-speed 10Gb ISL ports, each 5200 stackable switch provides maximum flexibility for configuring, managing and scaling SANs.

The SANbox 5602 stackable switch delivers the benefits of stackable IP switches for high performance 4Gb SANs. With up to sixteen 4Gb ports plus a four-pack of high-speed 10Gb ISL ports, each 5000 Series stackable switch provides maximum flexibility for workgroup or enterprise class SANs.

#### SANbox2-64 Switches

The SANbox2-64 switches offer a scalable, highly available solution to protect the investment in your SAN backbone. These next-generation switches bring performance, reliability and simplicity to storage networking. The SANbox2-64 switch is designed to meet the needs of your growing enterprise.

### Configuration Process

The configuration process for your SANbox switch involves three stages described in the following sections:

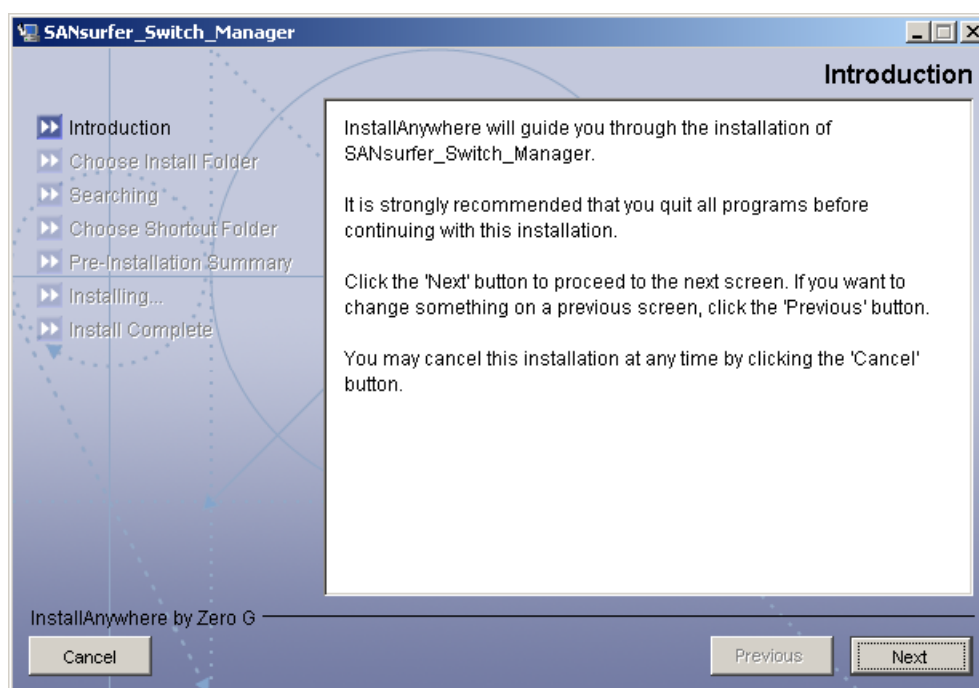
- [Installing the SANsurfer Switch Manager](#)
- [Initial Switch Configuration](#)
- [Switch-Specific Configuration Steps](#)

## Installing the SANsurfer Switch Manager

You can use the SANsurfer Switch Manager to configure both the SANbox 5000 series and the SANbox2-64. To install the SANsurfer Switch Manager, follow these steps:

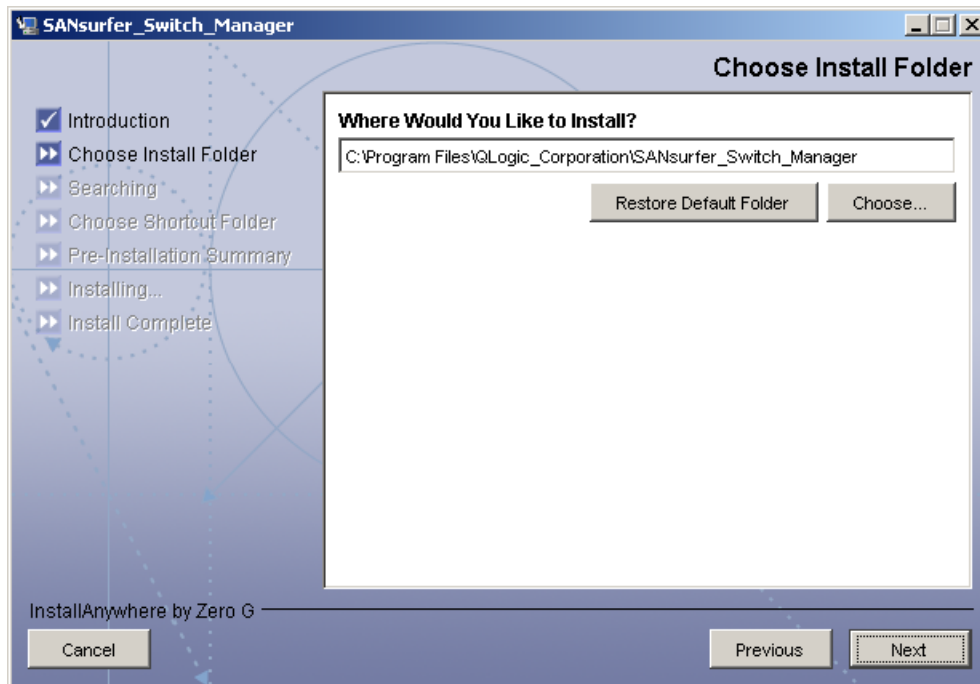
**NOTE:** The following steps explain how to download and install the SANsurfer Switch Manager separately from the SANsurfer Management Suite.

1. Download the SANsurfer Switch Manager from the Download section of the QLogic website ([http://www.qlogic.com/support/drivers\\_software.asp](http://www.qlogic.com/support/drivers_software.asp)) and double-click the icon to start the installation.
2. From the Introduction screen, click **Next**:

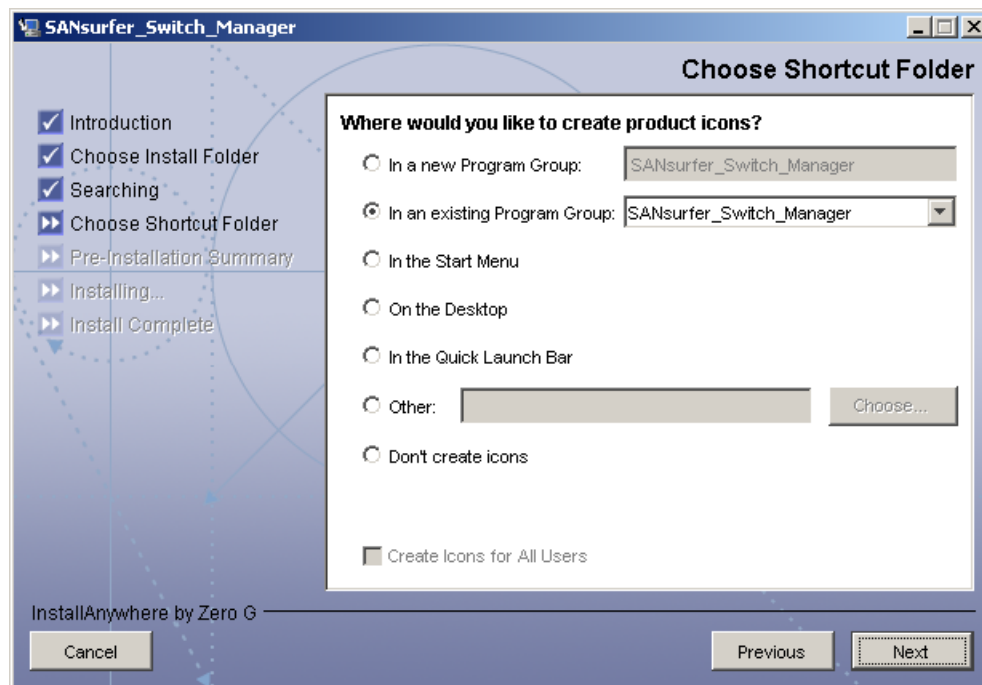




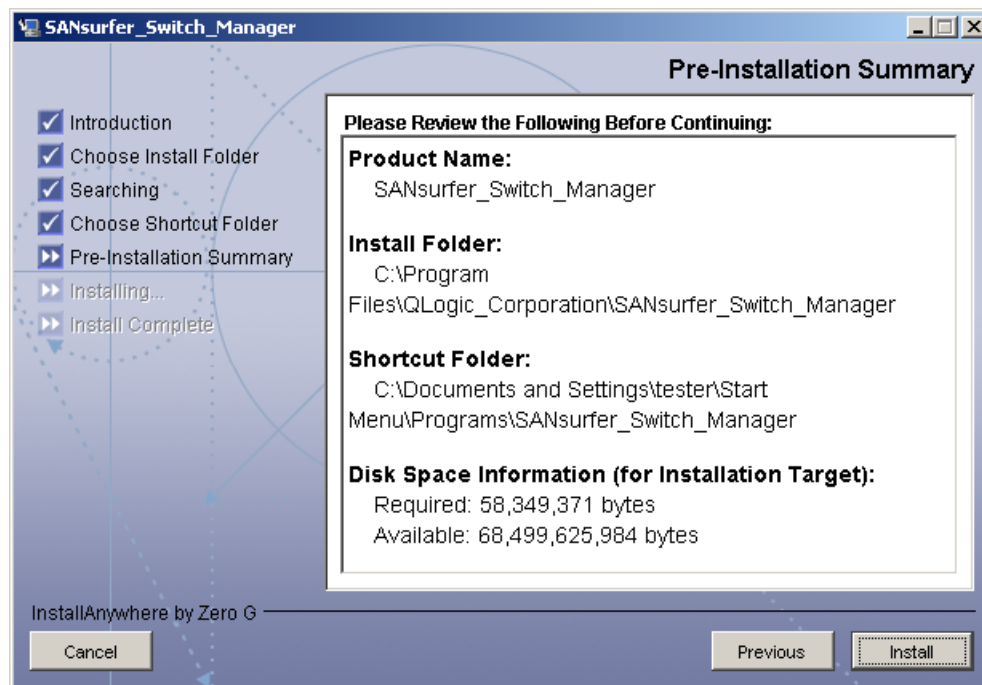
3. From the Choose Install Folder screen:
  - a. Select an installation folder.
  - b. Click **Next**.



4. Select the desired shortcut location and click **Next**.



5. Review the Pre-Installation Summary and click **Install** to begin the installation:

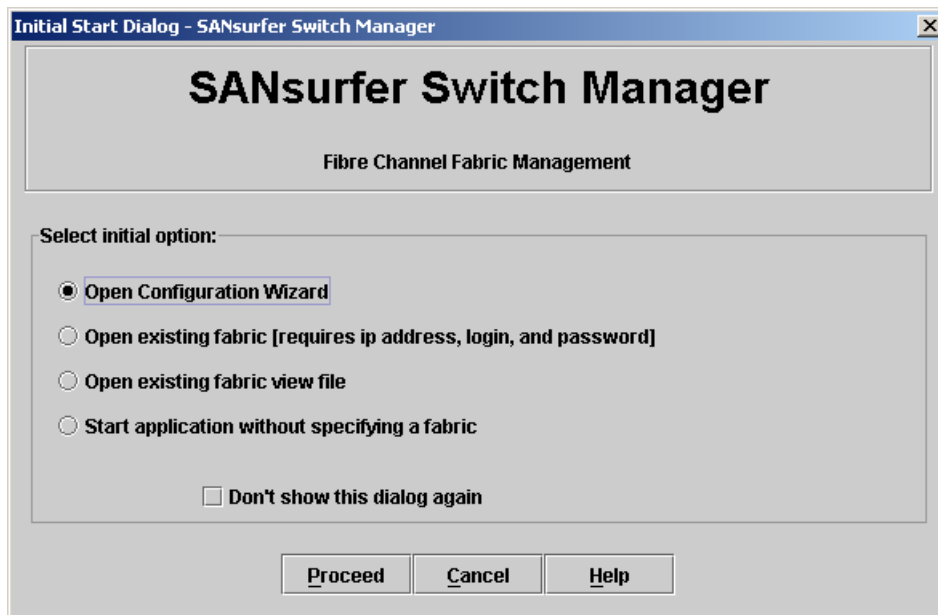


6. Click **Done** when the installation is complete.

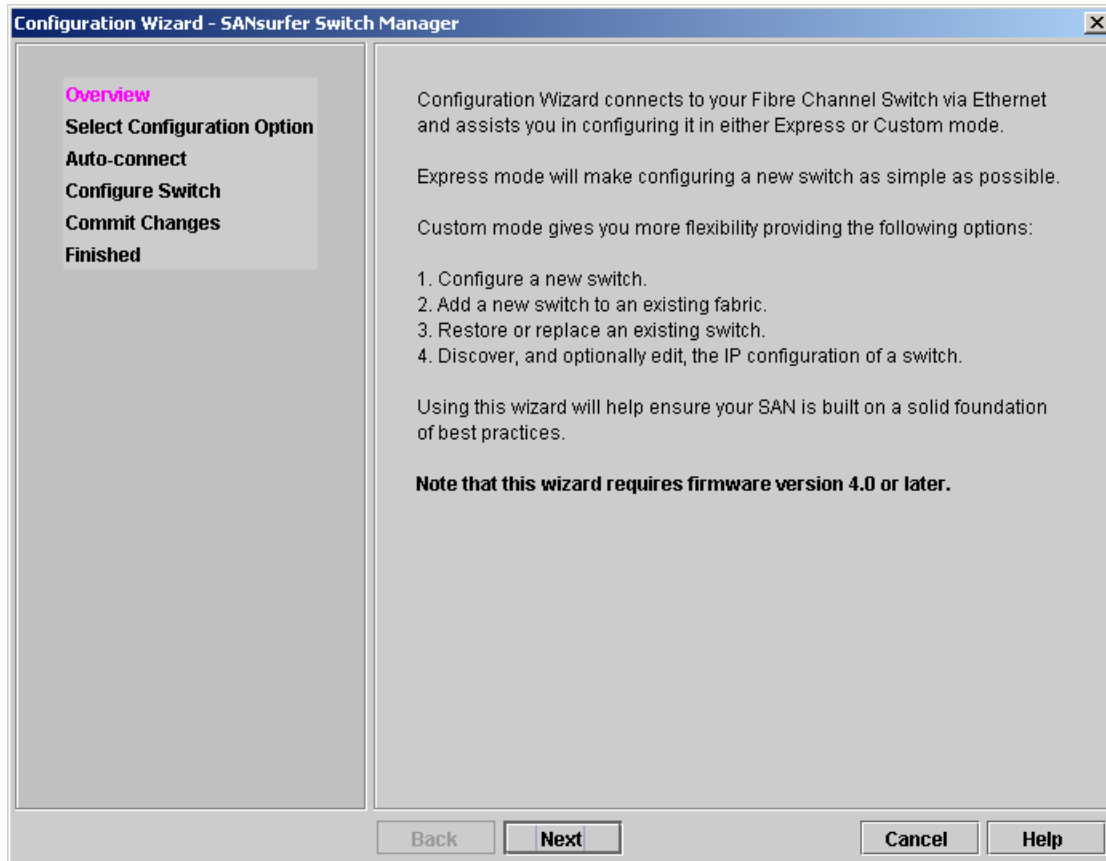
## Initial Switch Configuration

Perform the following steps for either the SANbox2-64 or a SANbox 5000 Series switch:

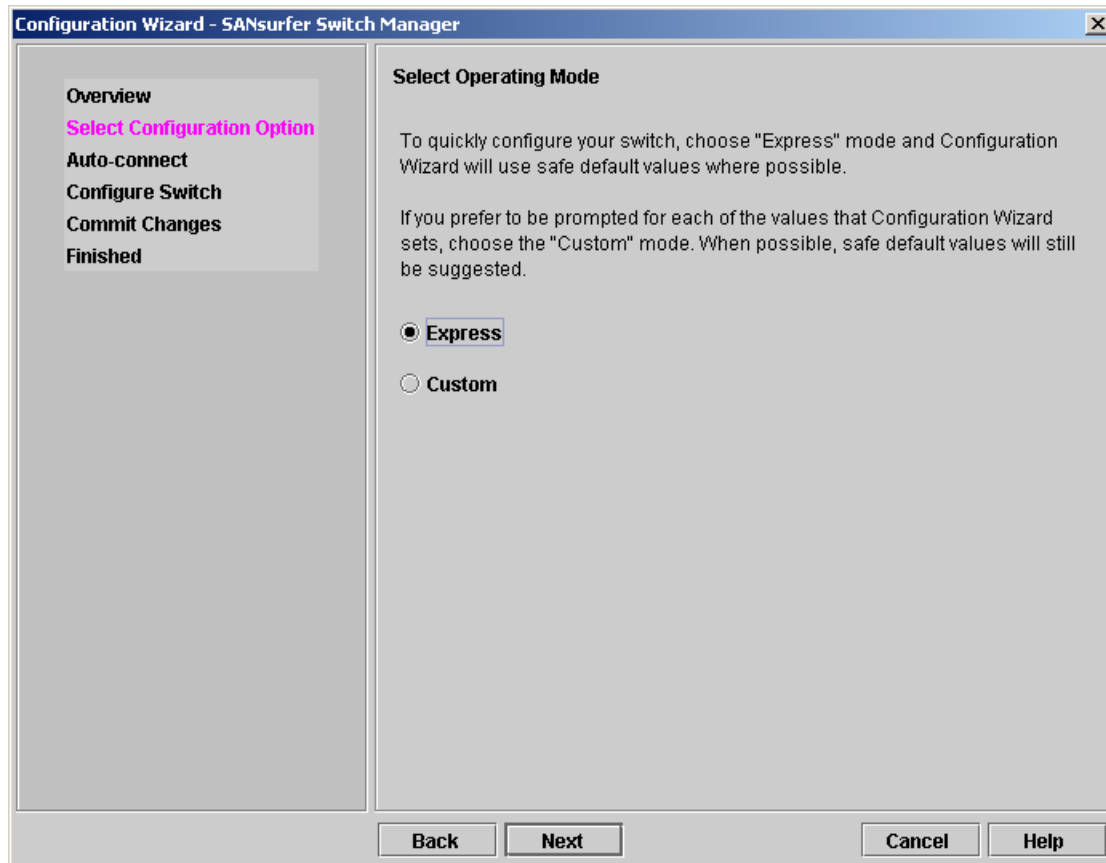
1. Launch SANSurfer Switch Manager.
2. From the Initial Start Dialog:
  - a. Select **Open Configuration Wizard**.
  - b. Click **Proceed**.



3. From the Overview window, click **Next**:



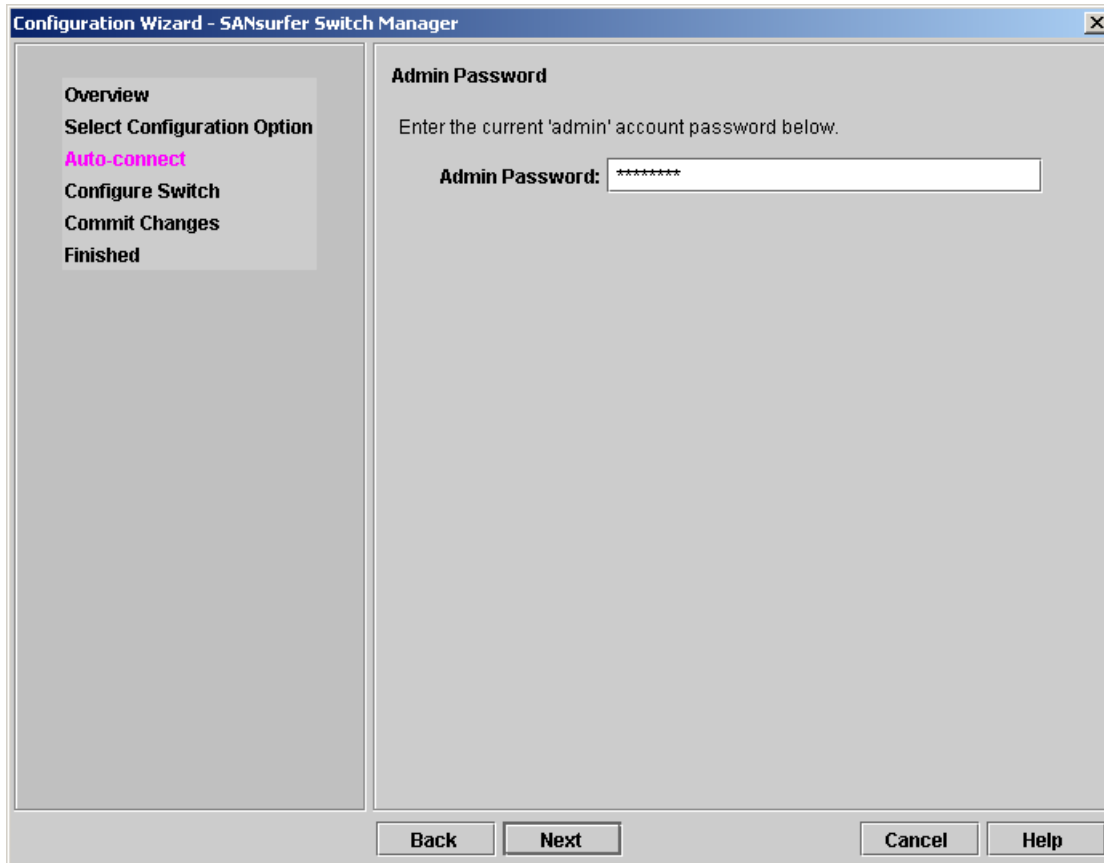
4. From the Select Operating Mode window:
  - a. Select **Express**.
  - b. Click **Next**.



5. From the Network Configuration window:
  - a. Enter a temporary IP address and Subnet Mask.
  - b. Click **Next**.

The screenshot shows a window titled "Configuration Wizard - SANsurfer Switch Manager". On the left is a sidebar with a list of steps: "Overview", "Select Configuration Option", "Auto-connect" (highlighted in pink), "Configure Switch", "Commit Changes", and "Finished". The main area is titled "Network Configuration" and contains the following text: "Connect the switch and this workstation using an Ethernet crossover cable, switch or hub." and "Enter the IP Address and Subnet Mask numbers for the switch as obtained from your Network Administrator." Below this text are two input fields: "IP Address:" with the value "10.20.67.202" and "Subnet Mask:" with the value "255.255.254.0". At the bottom of the window are four buttons: "Back", "Next", "Cancel", and "Help".

6. Enter "password" into the Admin Password field and click **Next**.

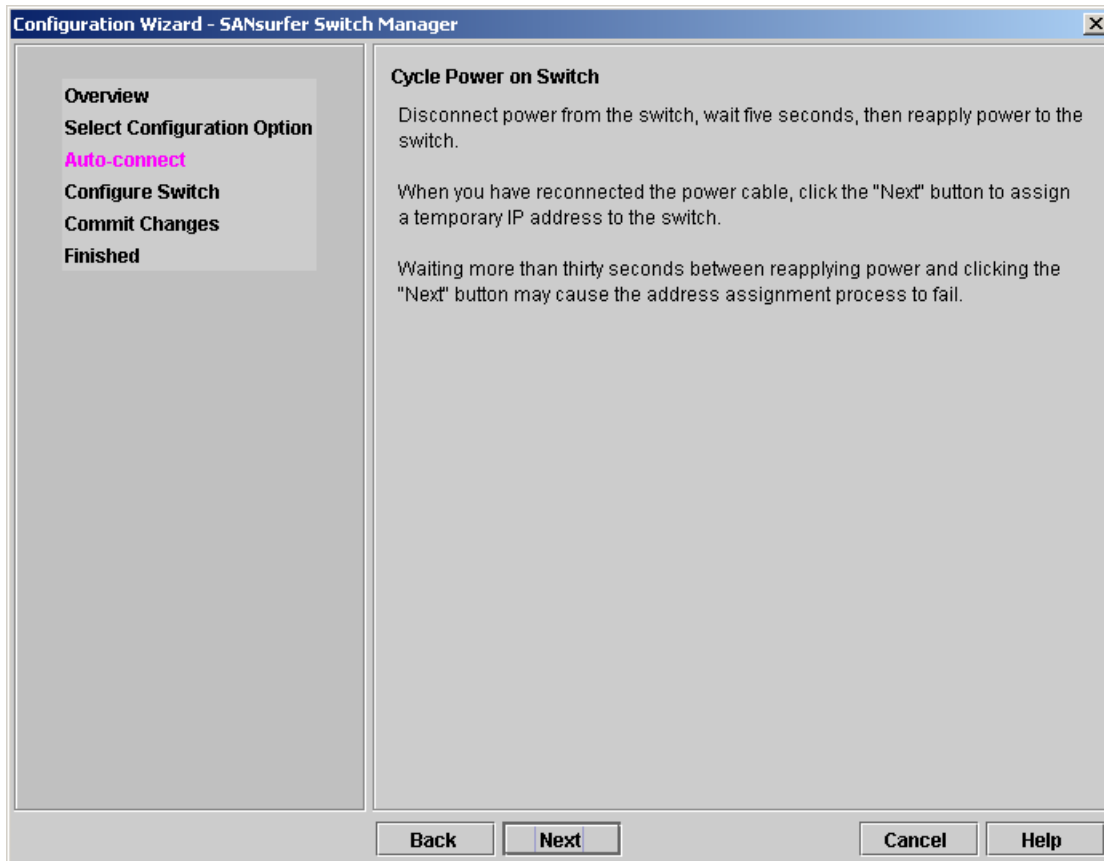


The image shows a screenshot of the 'Configuration Wizard - SANsurfer Switch Manager' window. On the left, a vertical sidebar contains a list of steps: 'Overview', 'Select Configuration Option', 'Auto-connect' (highlighted in pink), 'Configure Switch', 'Commit Changes', and 'Finished'. The main area of the window is titled 'Admin Password' and contains the instruction 'Enter the current 'admin' account password below.' Below this instruction is a text input field labeled 'Admin Password:' which contains seven asterisks (\*\*\*\*\*). At the bottom of the window, there are four buttons: 'Back', 'Next', 'Cancel', and 'Help'.

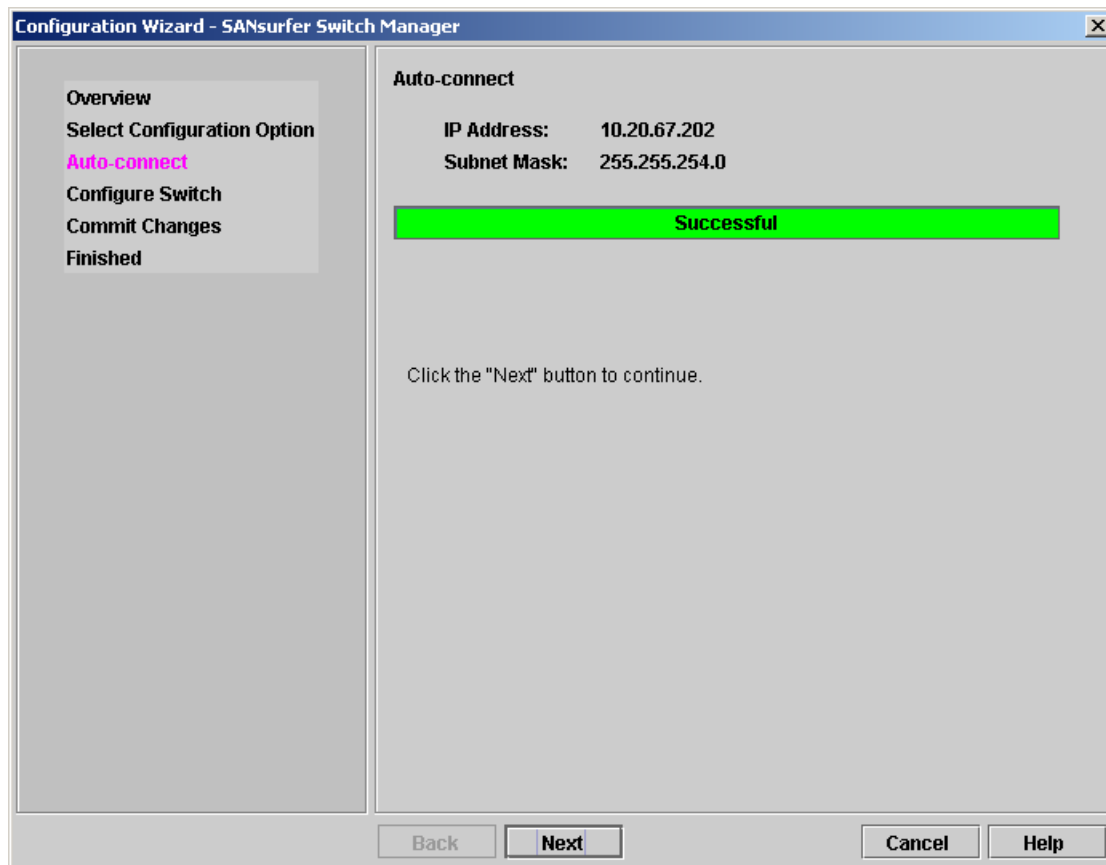
**NOTE:** User authentication is enabled by default.



7. When the Cycle Power on Switch window displays:
  - a. Power on or cycle power on the switch.
  - b. Click **Next** after re-applying power to the switch.



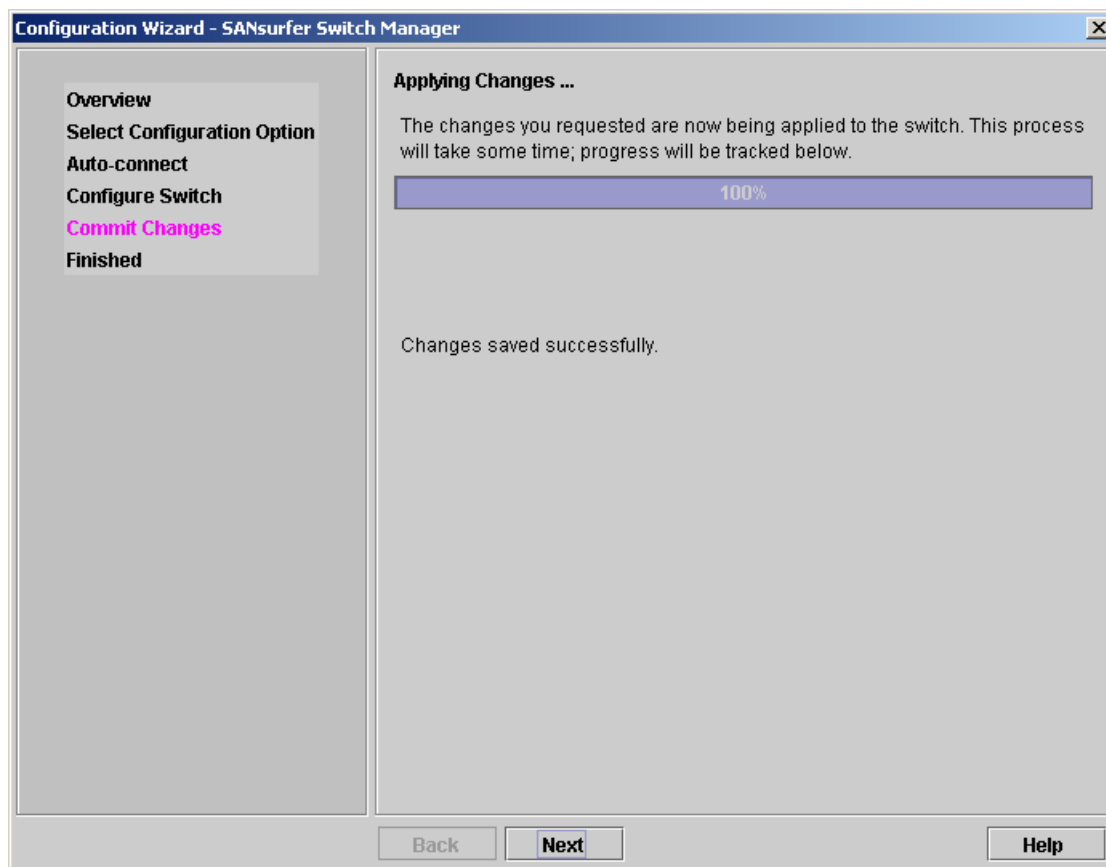
- Click **Next** when the initial network configuration is complete:



9. Enter a new password for the **Admin** account and click **Next**:

The screenshot shows a window titled "Configuration Wizard - SANsurfer Switch Manager". On the left is a sidebar with a list of steps: Overview, Select Configuration Option, Auto-connect, **Configure Switch** (highlighted in pink), Commit Changes, and Finished. The main area is titled "Switch Admin User Password". It contains a paragraph of text explaining the importance of setting a password for the default Admin user and disallowing the default password "password". Below the text are two input fields: "New Admin Password ( 8-20 characters ):" and "Confirm New Admin Password:", both containing masked characters (asterisks). At the bottom of the window are four buttons: "Back", "Next", "Cancel", and "Help".

10. Click **Next** to commit all the changes:



11. Click **Close** to exit the configuration wizard:

## Command Line Configuration

You can use the following serial port settings to perform the command line switch configuration:

- Baud Rate: 9600
- Data Bits: 8
- Parity: None
- Stop Bits: 1
- Flow Control: None

To configure the switch from the command line, follow these steps:

1. Log in to the switch.
2. Enter administrator mode:

```
SANbox #> admin start
```

3. Start the switch setup program to configure the IP address by typing this command:

```
SANbox (admin) #> set setup system
```

4. When the setup program runs, follow the command line instructions. For example:

```
A list of attributes with formatting and current values will follow.
Enter a new value or simply press the ENTER key to accept the current value.
If you wish to terminate this process before reaching the end of the list
press 'q' or 'Q' and the ENTER key to do so.
Eth0NetworkDiscovery (1=Static, 2=Bootp, 3=Dhcp, 4=Rarp) [Static ]
Eth0NetworkAddress (dot-notated IP Address) [0.0.0.0 ] <IP Address>
Eth0NetworkMask (dot-notated IP Address) [0.0.0.0 ] <Netmask>
Eth0GatewayAddress (dot-notated IP Address) [0.0.0.0 ] <Gateway>
AdminTimeout (dec value 0-1440 minutes, 0=never) [30 ]
InactivityTimeout (dec value 0-1440 minutes, 0=never) [0 ]
LocalLogEnabled (True / False) [True ]
RemoteLogEnabled (True / False) [False ]
RemoteLogHostAddress (dot-notated IP Address) [10.0.0.254 ]
NTPClientEnabled (True / False) [False ]
NTPServerAddress (dot-notated IP Address) [10.0.0.254 ]
EmbeddedGUIEnabled (True / False) [True ]
Do you want to save and activate this system setup? (y/n): [n] y
System setup saved and activated.
```

## Switch-Specific Configuration Steps

The additional steps to configure your SANbox switch are similar, whether you use the SANbox 5000 Series or the SANbox2-64. After you install the SANSurfer Switch Manager and perform the initial switch configuration, refer to the appropriate section for your switch:

- [SANbox 5000 Series Configuration](#)
- [SANbox2-64 Configuration](#)

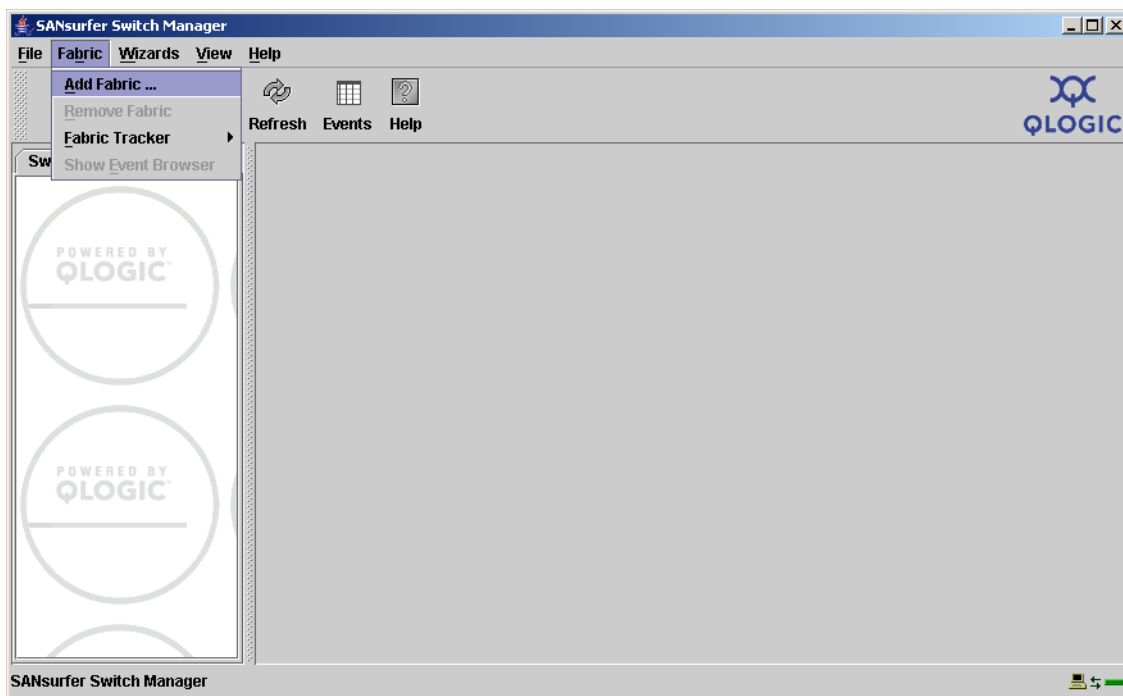
## SANbox 5000 Series Configuration

The following procedures explain how to configure a SANbox 5000 series switch and verify the connections:

- Command Line Configuration
- Configuring Port Properties
- Connecting Cables
- Configuring Zones

### Configuring Port Properties

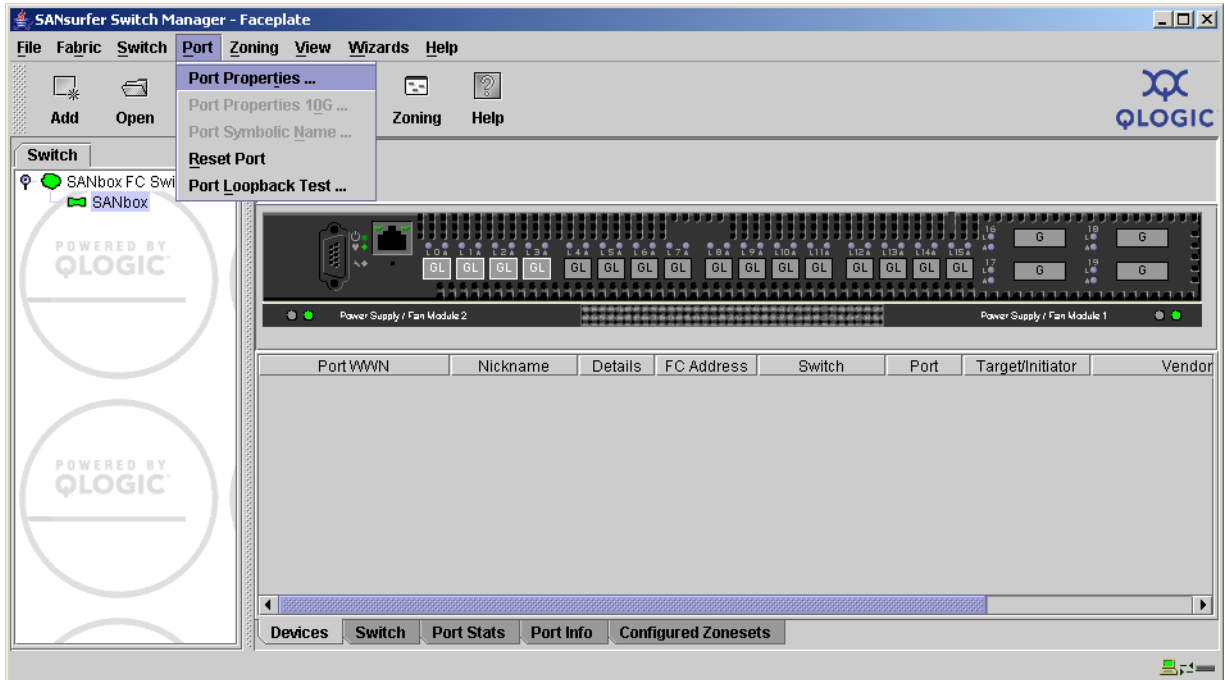
1. From the SANsurfer Switch Manager, select **Add Fabric** from the Fabric menu:



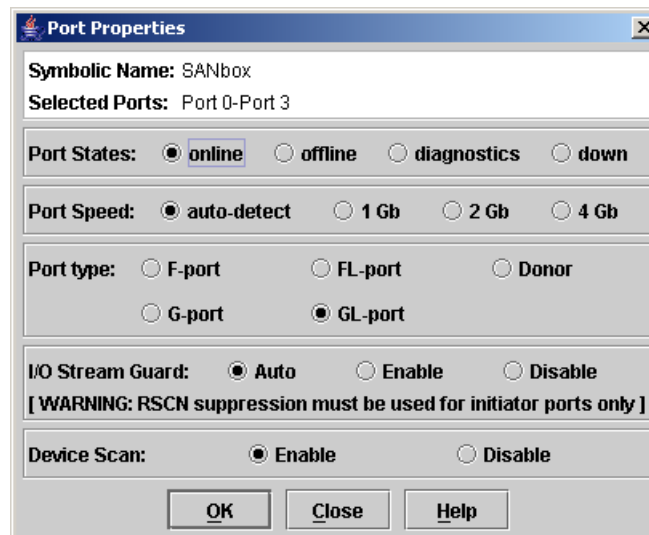
2. From the Add a New Fabric dialog:
  - a. Enter a **Fabric Name**, **IP Address**, **Login Name**, and **Password**.
  - b. Click **Add Fabric**.



3. From the SANsurfer Switch Manager – Faceplate window:
  - a. Select the switch you want to configure.
  - b. Select one or more 1/2/4Gb ports from the faceplate.
  - c. Select **Port Properties** from the Port menu.



4. From the Port Properties dialog:
  - a. Select the desired port settings.
  - b. Click **OK**.



The Port Properties dialog box is shown with the following settings:

- Symbolic Name: SANbox
- Selected Ports: Port 0-Port 3
- Port States: ☒ online, ☐ offline, ☐ diagnostics, ☐ down
- Port Speed: ☒ auto-detect, ☐ 1 Gb, ☐ 2 Gb, ☐ 4 Gb
- Port type: ☐ F-port, ☐ FL-port, ☐ Donor, ☐ G-port, ☒ GL-port
- I/O Stream Guard: ☒ Auto, ☐ Enable, ☐ Disable
- [ WARNING: RSCN suppression must be used for initiator ports only ]
- Device Scan: ☒ Enable, ☐ Disable
- Buttons: OK, Close, Help

5. Click **OK** to close the Updating Port Properties message:



The Updating Port Properties message box displays the following text:

Your changes have been successfully completed on the switch.  
Wait while newly updated information is read in from the switch.

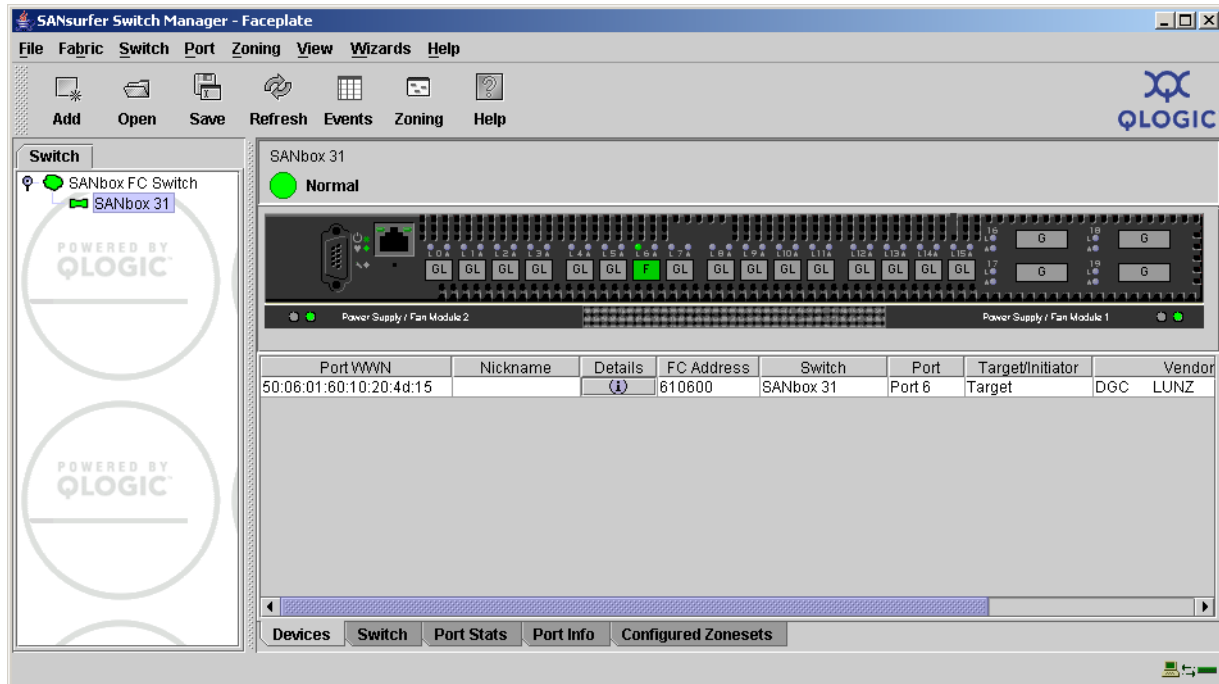
Status: Complete. Click 'OK' to continue.

Buttons: OK



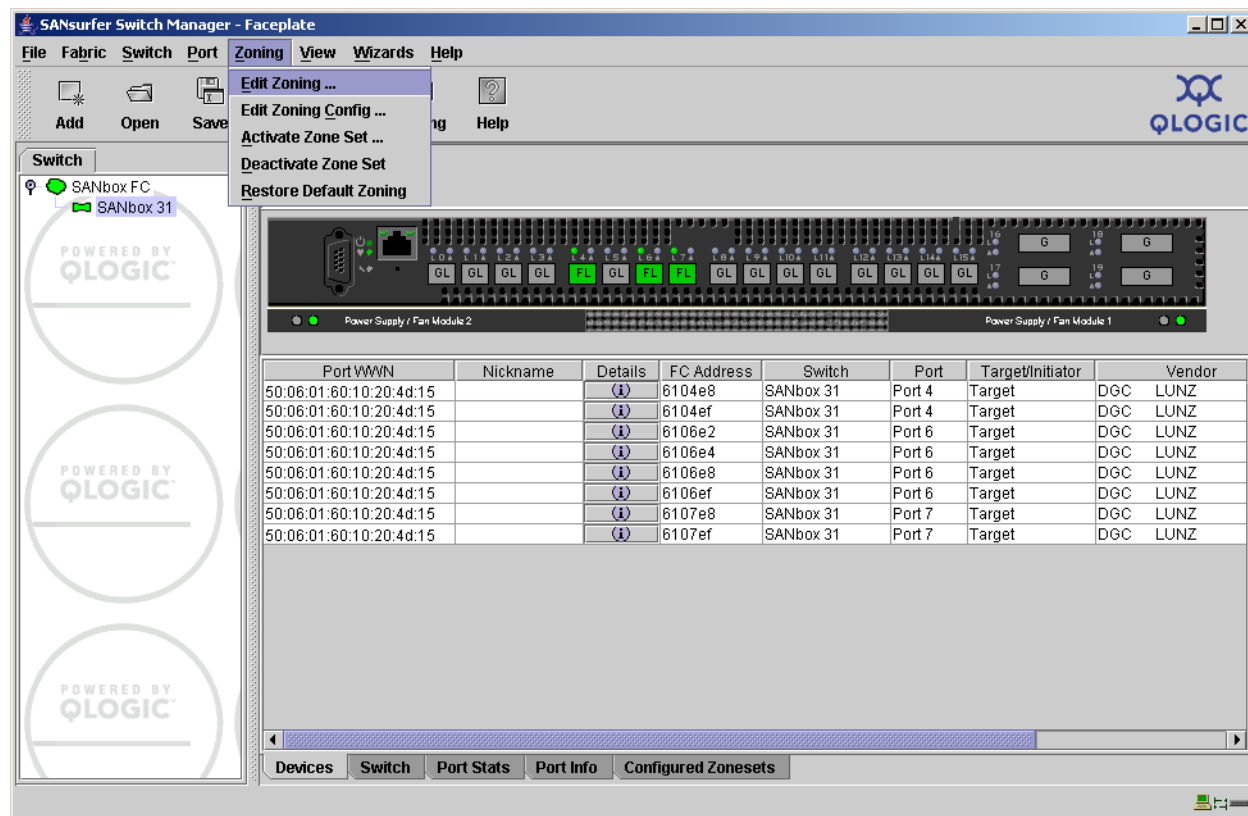
## Connecting Cables

1. Connect the devices to the SANbox 5000 series switch ports you configured.
2. Verify that the green Login LED is illuminated for each device.
3. Launch SANSurfer Switch Manager and connect to the SANbox 5200.
4. From the SANSurfer Switch Manager – Faceplate window, verify that all devices are listed.

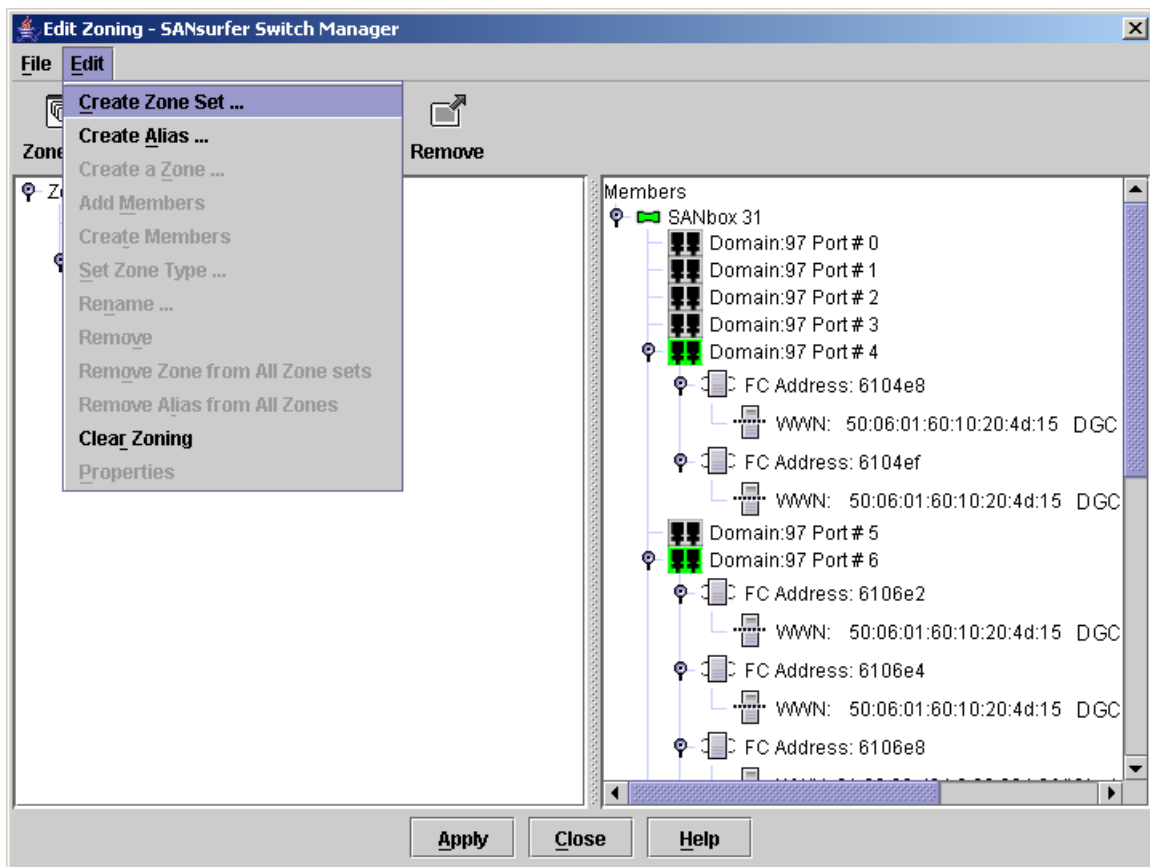


## Configuring Zones

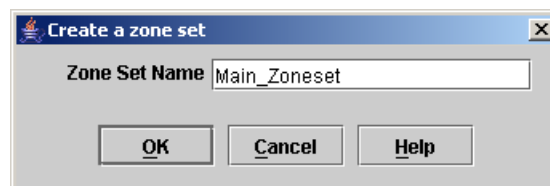
1. Launch the SANsurfer Switch Manager and connect to the SANbox 5000 series switch.
2. From the SANsurfer Switch Manager – Faceplate window, select **Edit Zoning** from the Zoning menu:



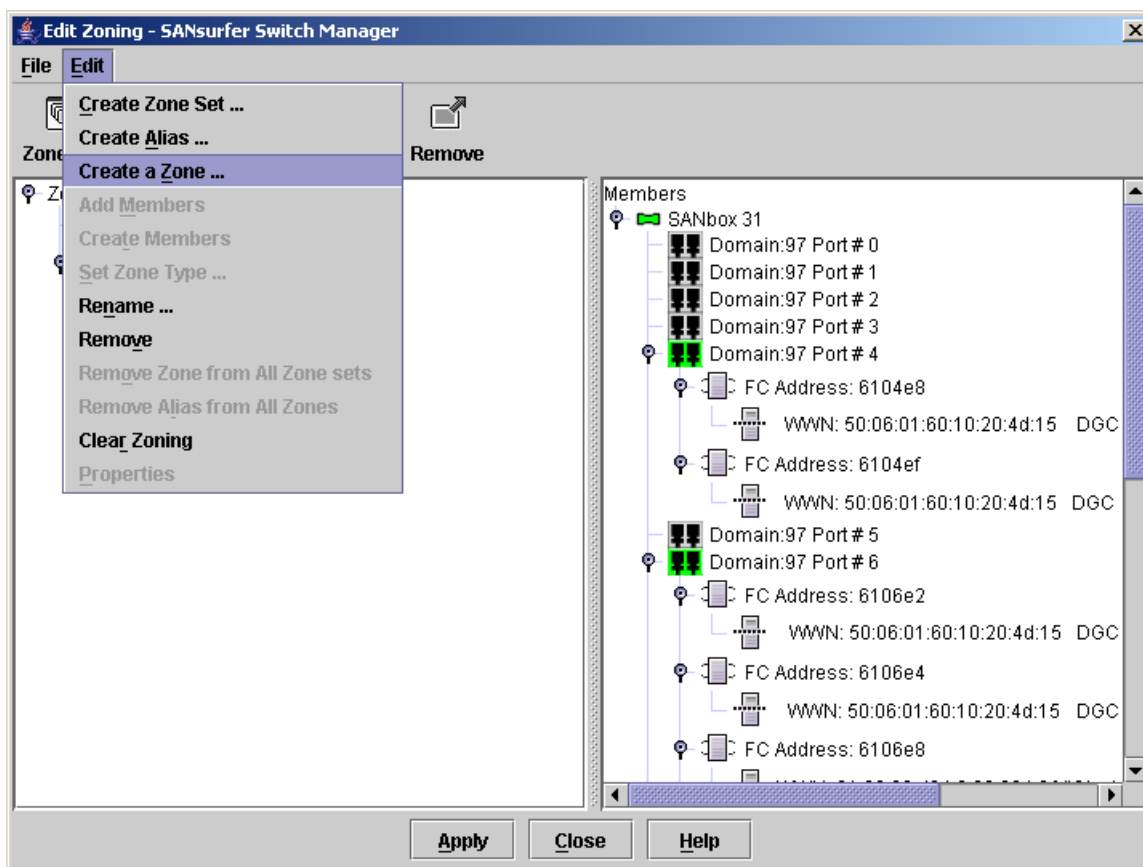
3. From the Edit Zoning dialog, select **Create Zone Set** from the Edit menu:



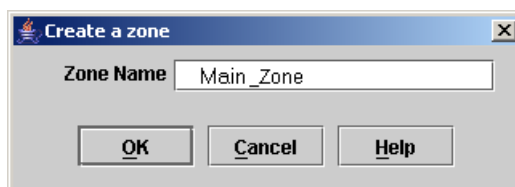
4. From the Create a zone set dialog:
  - a. Enter a **Zone Set Name**.
  - b. Click **OK**.



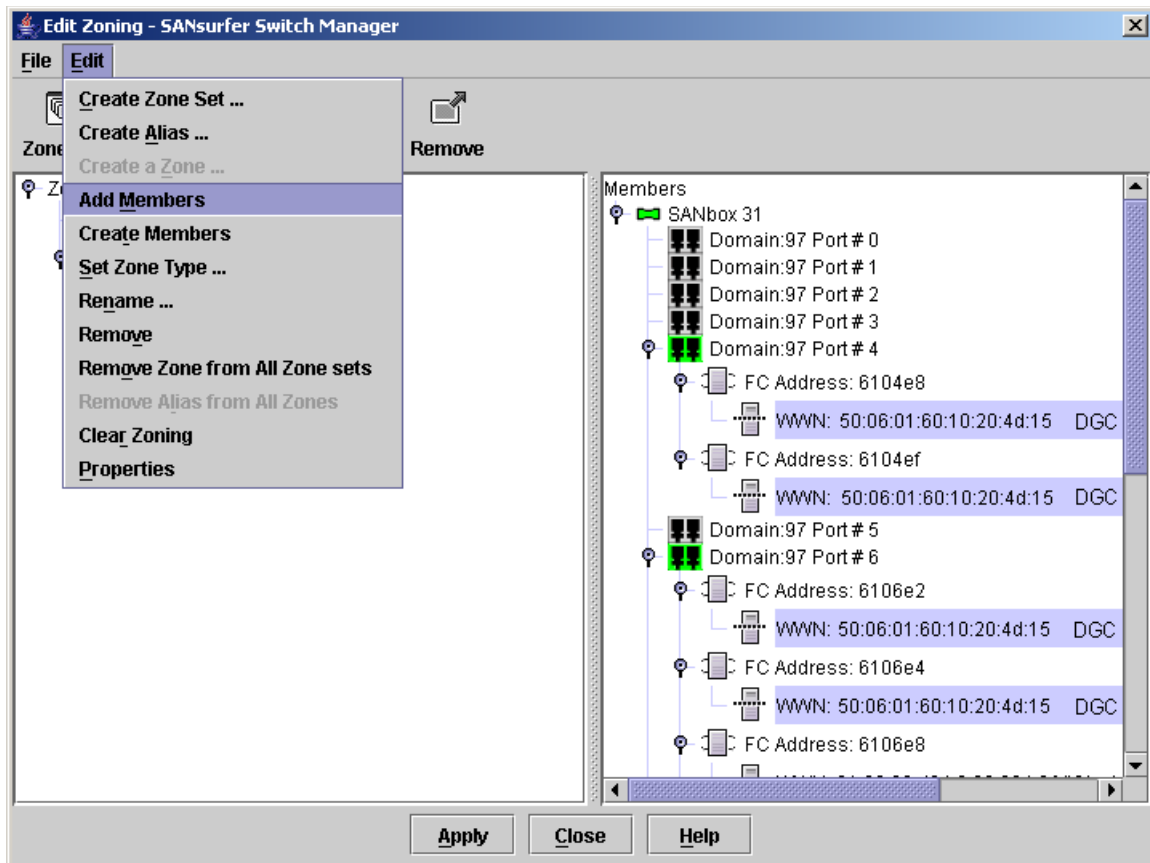
5. From the Edit Zoning dialog:
  - a. Select the new zone set in the left frame.
  - b. Select **Create a Zone** from the Edit menu.



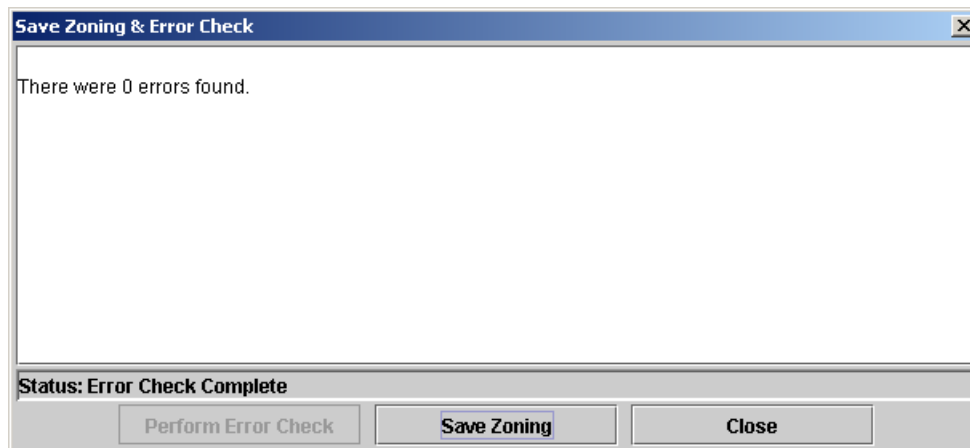
6. From the Create a zone dialog:
  - a. Enter a **Zone Name**.
  - b. Click **OK**.



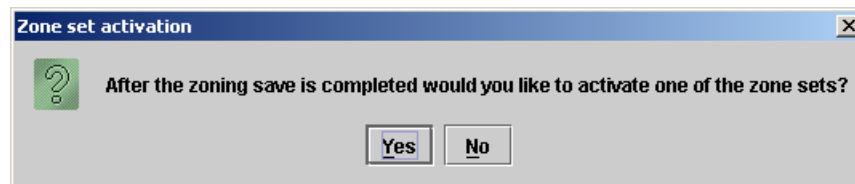
7. From the Edit Zoning dialog:
  - a. Expand the zone set and select the zone in the left frame.
  - b. Highlight the devices to add in the right frame.
  - c. Select **Add Members** from the Edit menu.
  - d. Click **Apply**.



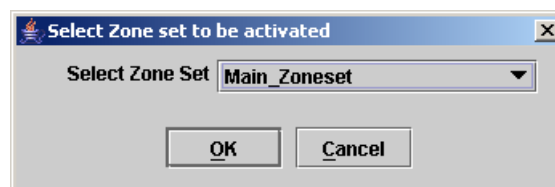
8. From the Save Zoning & Error Check dialog:
  - a. Click **Perform Error Check** and verify that no errors are found.
  - b. Click **Save Zoning**.



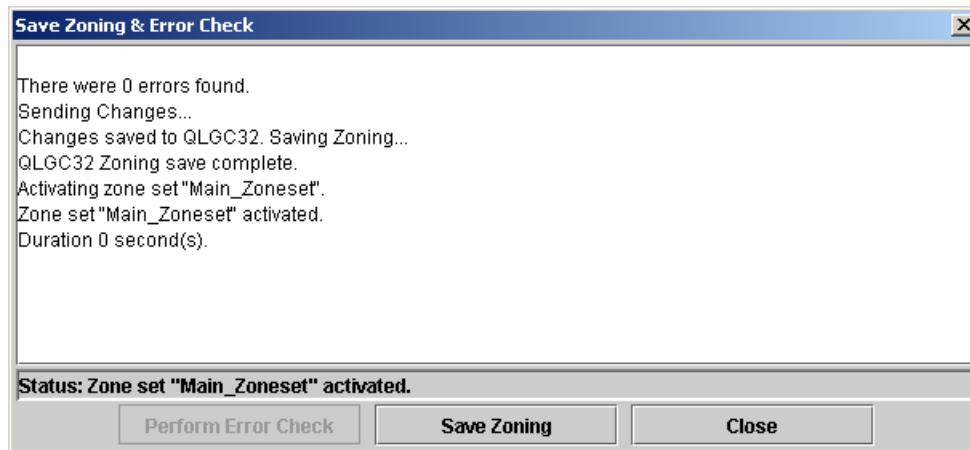
9. If you would like to activate your new zone set now, click **Yes** and continue to step 10. Otherwise, click **No** and skip to step 13.



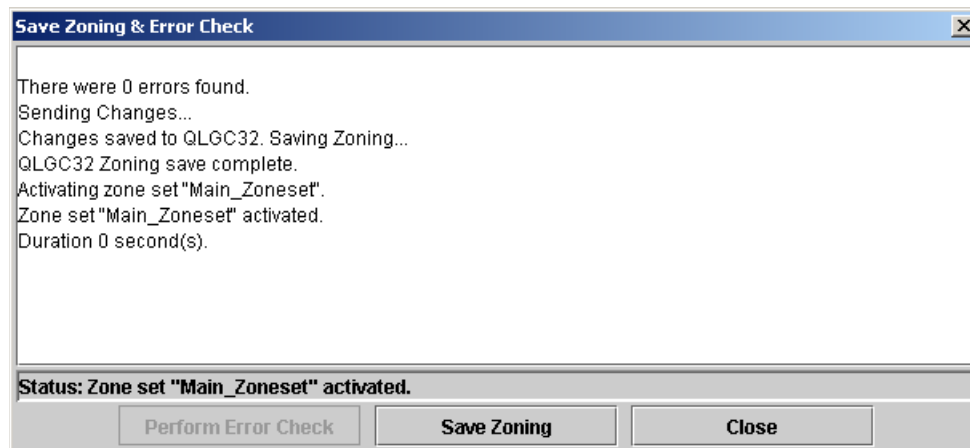
10. Select the zone set you would like to activate and click **OK**:



11. When the zone set has been activated, click **Close**:



12. Click **Close** to exit the Edit Zoning dialog. Skip the remaining steps if you have activated your zone.
13. When the zone set has been saved, click **Close**:

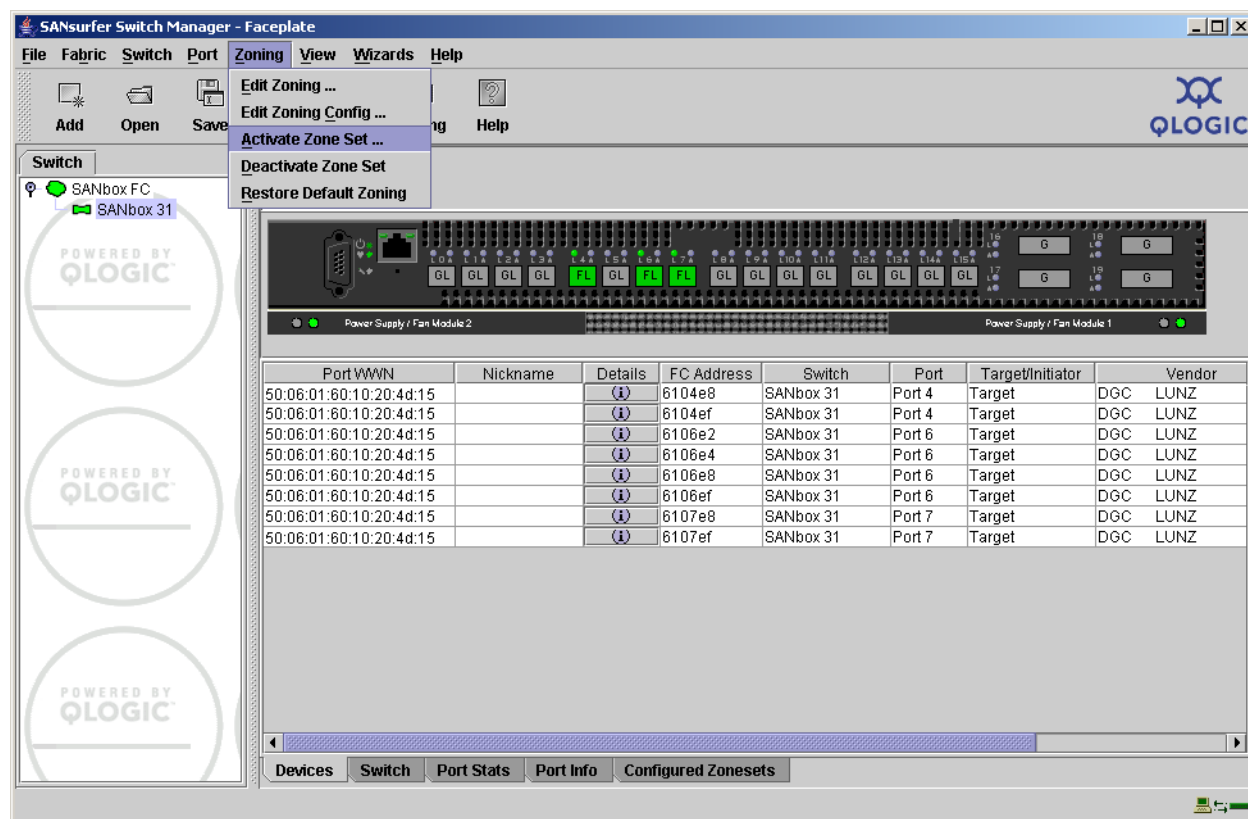


14. Click **Close** to exit from the Edit Zoning dialog.

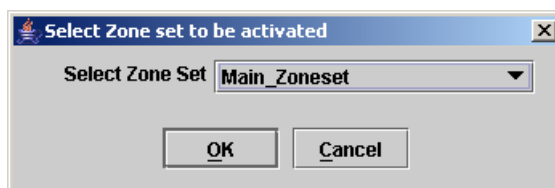
## Activating the Zone Set Manually

To manually activate the zone set, follow these steps:

1. From the SANsurfer Switch Manager Faceplate window, select **Activate Zone Set** from the Zoning menu:

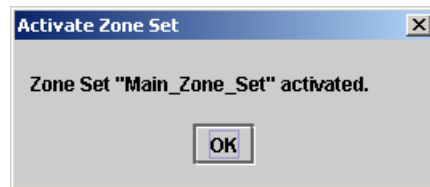


2. Select the zone set you would like to activate and click **OK**:





3. Click **OK** to the Activate Zone Set message:





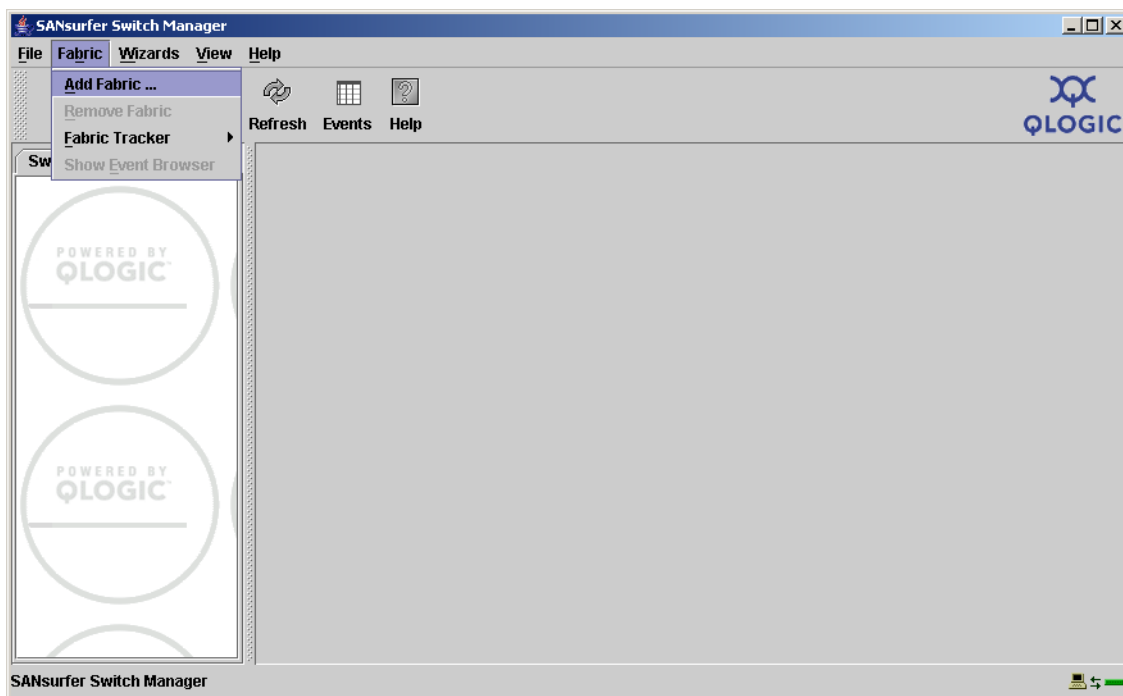
## SANbox2-64 Configuration

The following procedures explain how to configure the SANbox2-64 switch, verify the connections and test your configuration:

- Configuring Port Properties
- Connecting Cables
- Configuring Zones

### Configuring Port Properties

1. From the SANsurfer Switch Manager, select **Add Fabric** from the Fabric menu:



2. From the Add a New Fabric dialog:
  - a. Enter a **Fabric Name**, **IP Address**, **Login Name**, and **Password**.
  - b. Click **Add Fabric**.



**Add a New Fabric - SANsurfer Switch Manager**

**Add a New Fabric**

**Fabric Name:** SANbox FC Switch

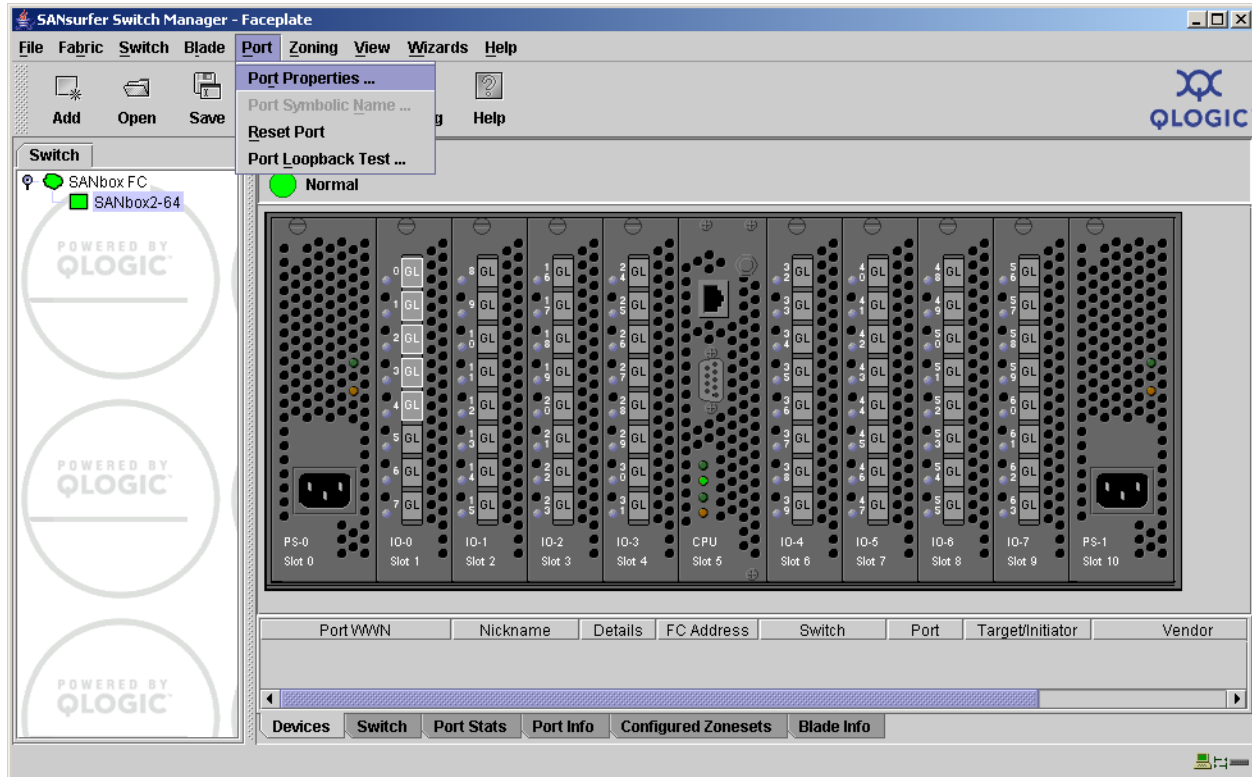
**IP Address:** 10.20.67.202

**Login Name:** admin

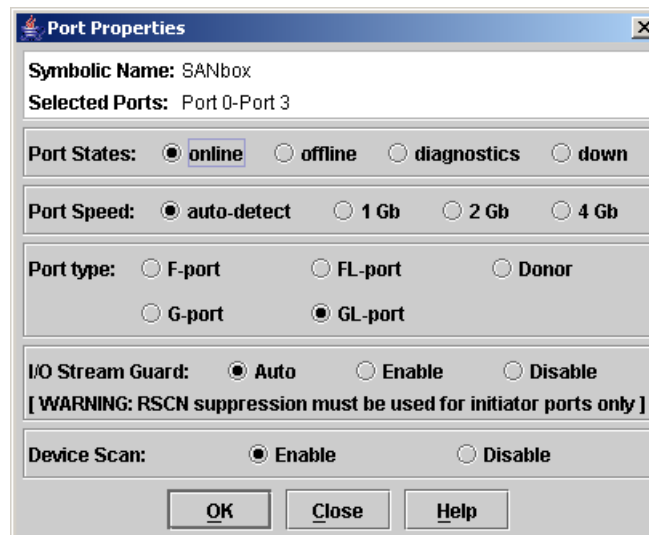
**Password:** \*\*\*\*\*

**Add Fabric** **Close** **Help**

3. From the SANsurfer Switch Manager – Faceplate window:
  - a. Select the switch you want to configure.
  - b. Select one or more 1/2/4Gb ports from the faceplate.
  - c. Select **Port Properties** from the Port menu.



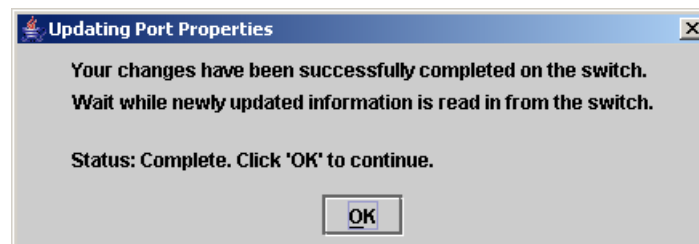
4. From the Port Properties dialog:
  - a. Select the desired port settings.
  - b. Click **OK**.



The Port Properties dialog box is shown with the following settings:

- Symbolic Name: SANbox
- Selected Ports: Port 0-Port 3
- Port States: ☒ online, ☐ offline, ☐ diagnostics, ☐ down
- Port Speed: ☒ auto-detect, ☐ 1 Gb, ☐ 2 Gb, ☐ 4 Gb
- Port type: ☐ F-port, ☐ FL-port, ☐ Donor, ☐ G-port, ☒ GL-port
- I/O Stream Guard: ☒ Auto, ☐ Enable, ☐ Disable
- [ WARNING: RSCN suppression must be used for initiator ports only ]
- Device Scan: ☒ Enable, ☐ Disable
- Buttons: OK, Close, Help

5. Click **OK** to close the Updating Port Properties message:



The Updating Port Properties message box displays the following text:

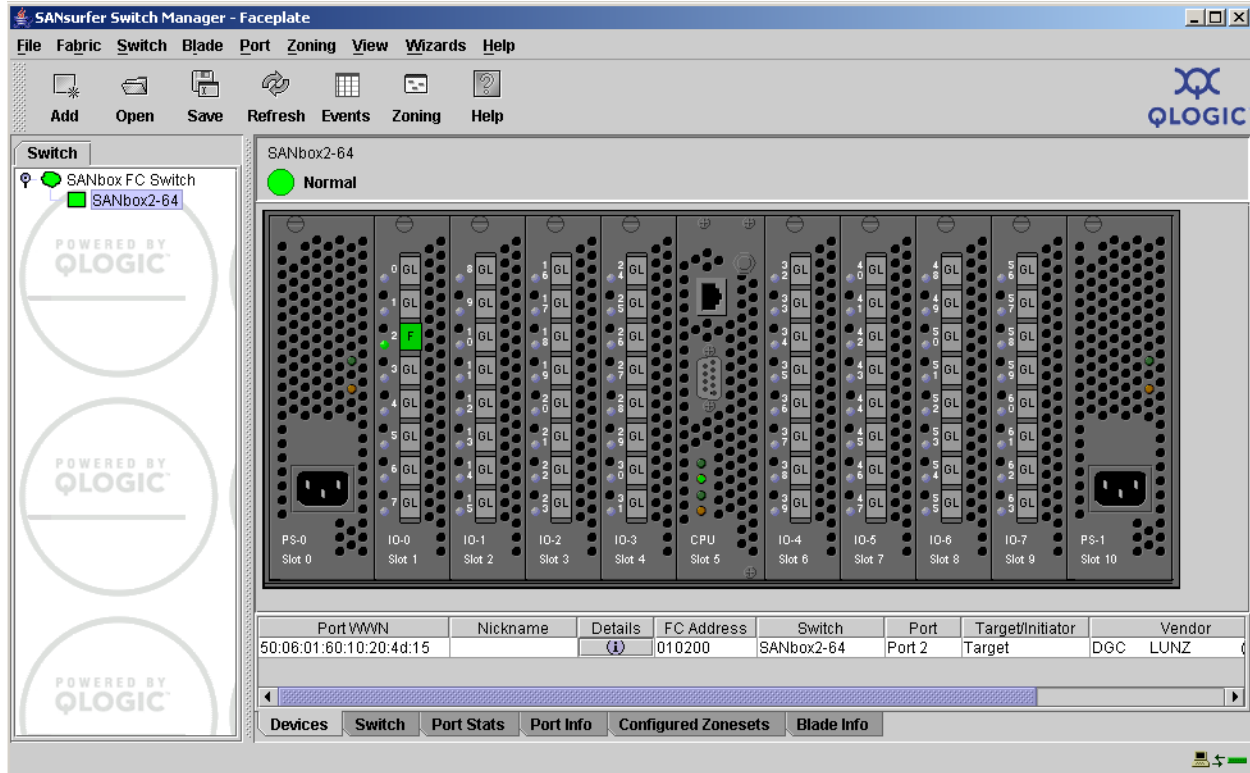
Your changes have been successfully completed on the switch.  
Wait while newly updated information is read in from the switch.

Status: Complete. Click 'OK' to continue.

Button: OK

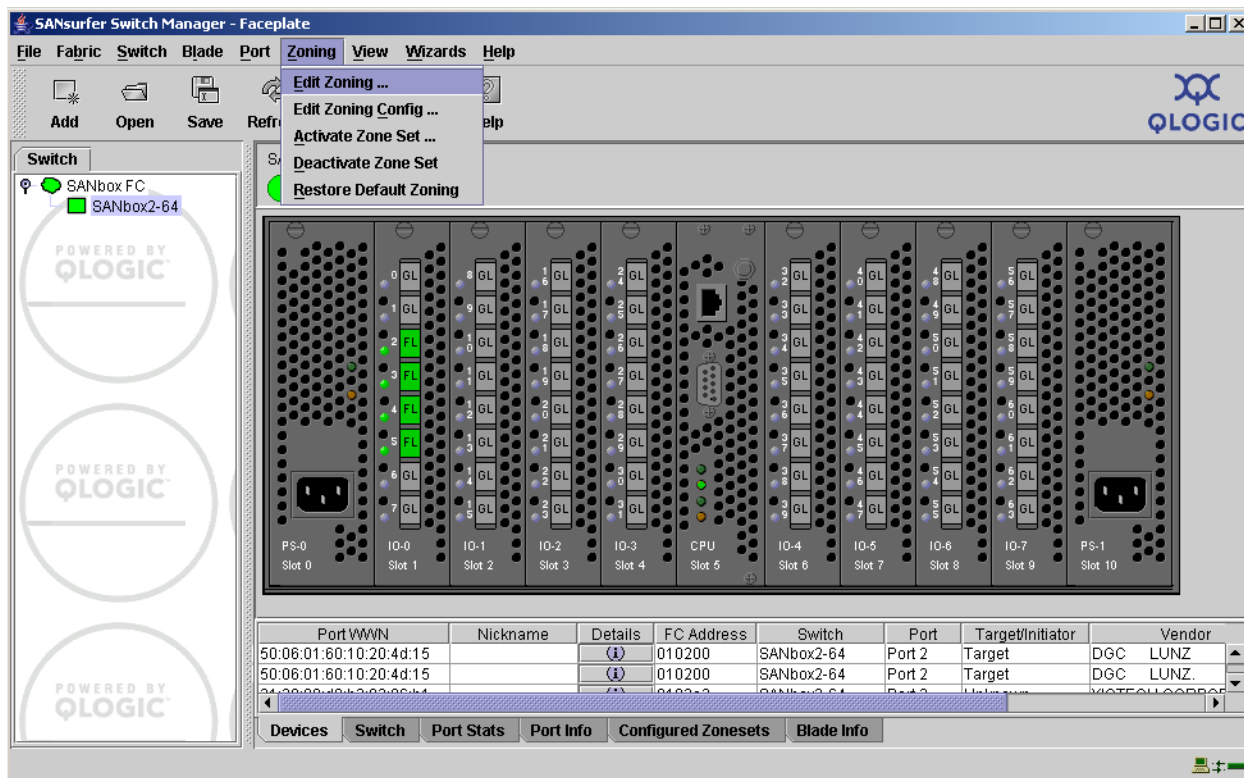
## Connecting Cables

1. Connect the devices to the SANbox2-64 switch ports you configured.
2. Verify that the green Login LED is illuminated for each device.
3. Launch SANSurfer Switch Manager and connect to the SANbox2-64.
4. From the SANSurfer Switch Manager – Faceplate window, verify that all devices are listed.



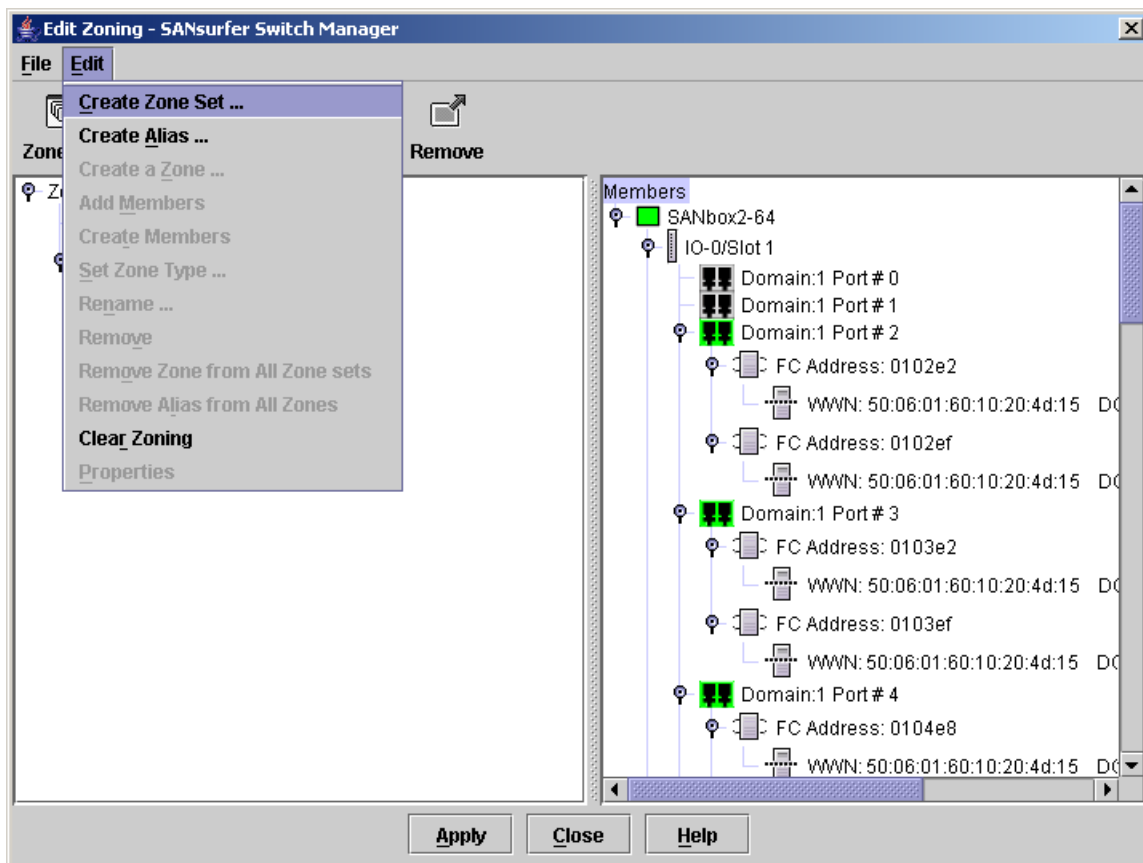
## Configuring Zones

1. Launch the SANsurfer Switch Manager and connect to the SANbox2-64 switch.
2. From the SANsurfer Switch Manager – Faceplate window, select **Edit Zoning** from the Zoning menu:

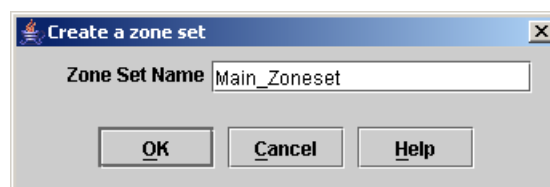




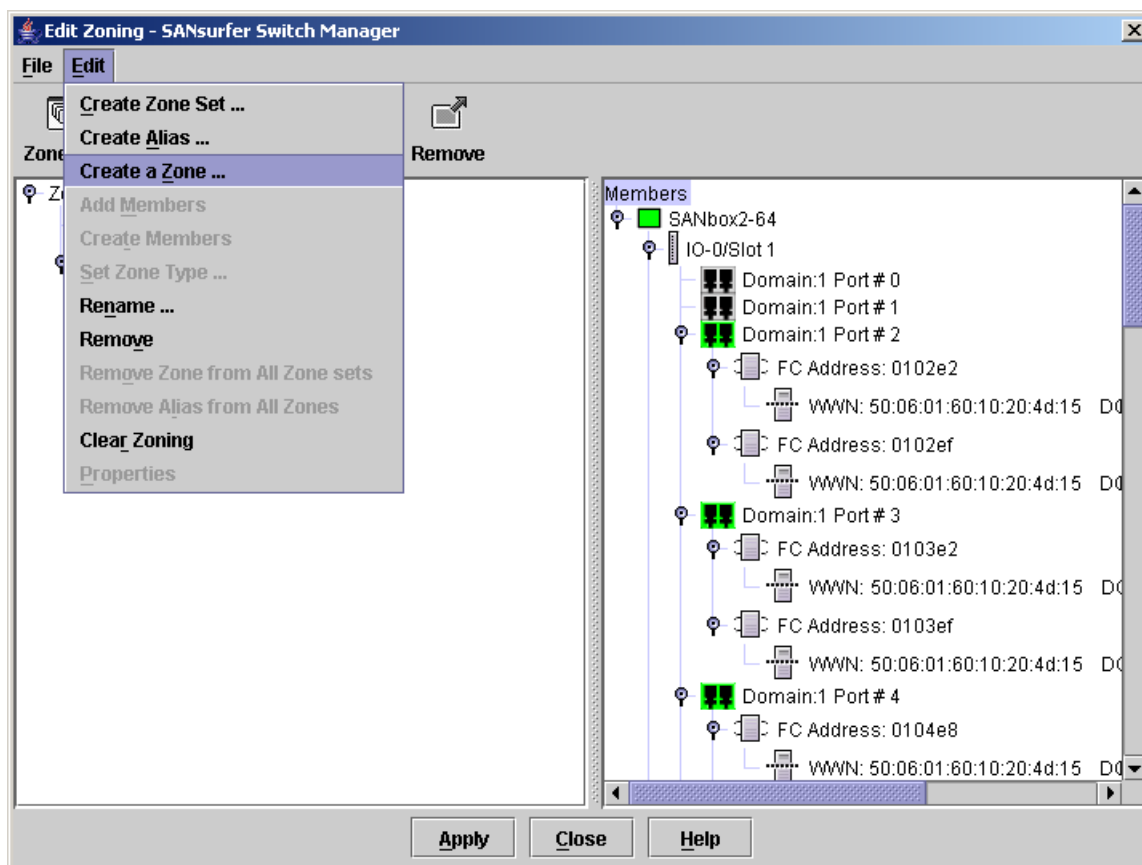
3. From the Edit Zoning dialog, select **Create Zone Set** from the Edit menu:



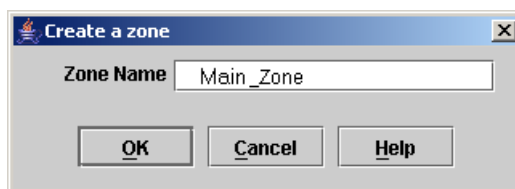
4. From the Create a zone set dialog:
  - a. Enter a **Zone Set Name**.
  - b. Click **OK**.



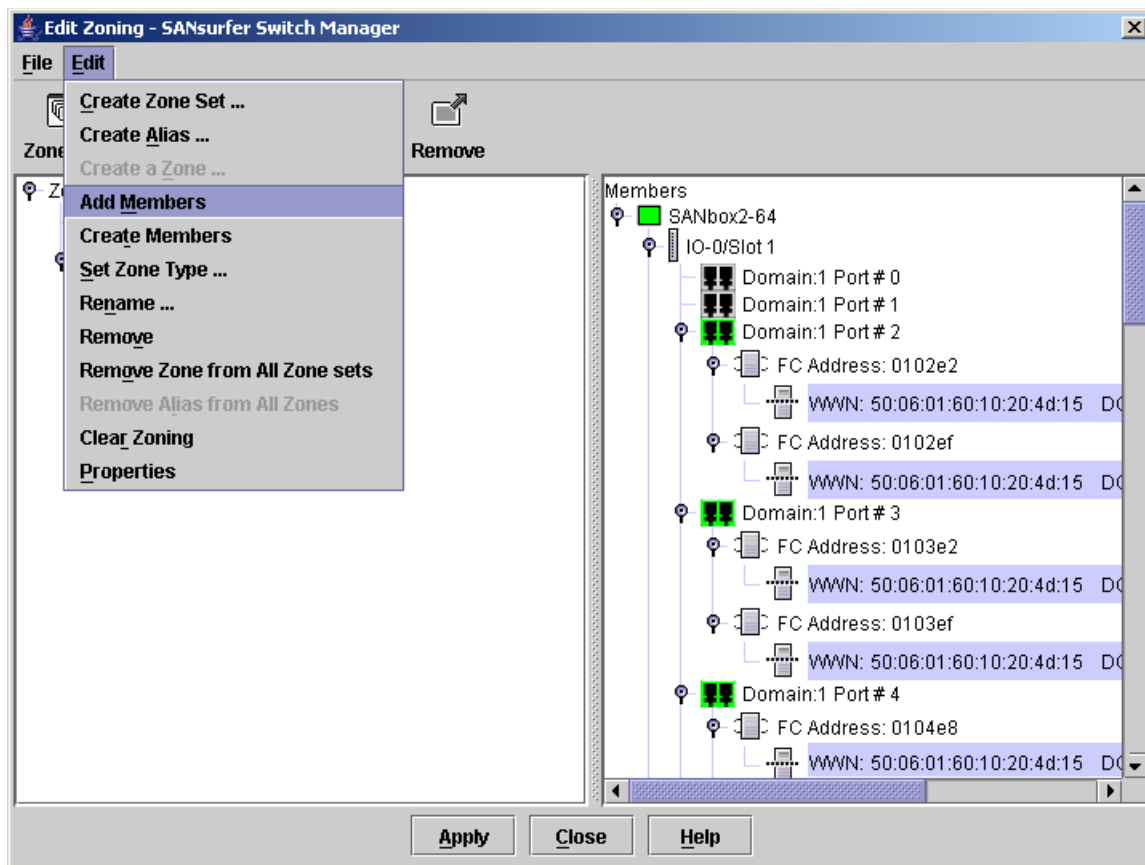
5. From the Edit Zoning dialog:
  - a. Select the new zone set in the left frame.
  - b. Select **Create a Zone** from the Edit menu.



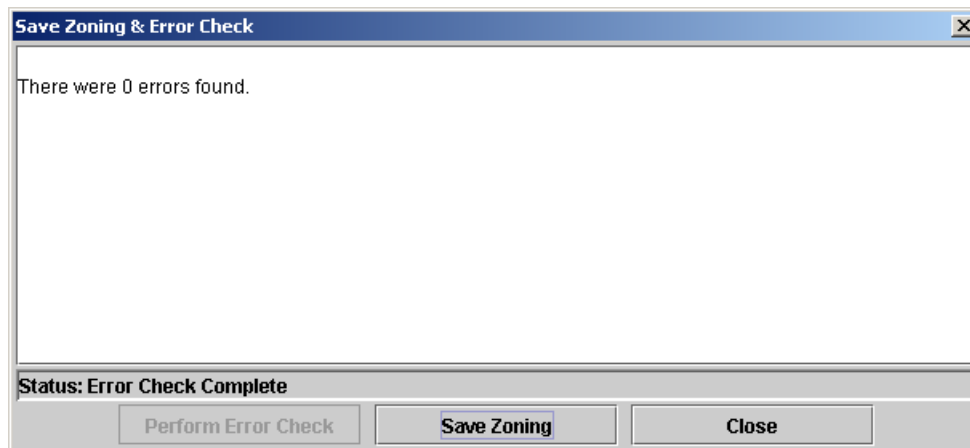
6. From the Create a zone dialog:
  - a. Enter a **Zone Name**.
  - b. Click **OK**.



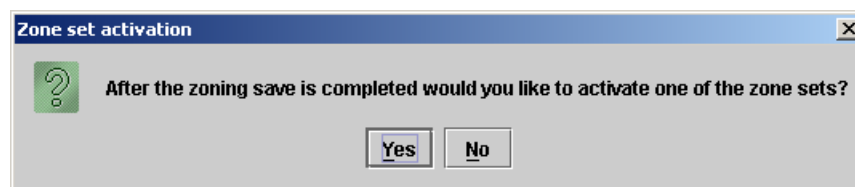
7. From the Edit Zoning dialog:
  - a. Expand the zone set and select the zone in the left frame.
  - b. Highlight the devices to add in the right frame.
  - c. Select **Add Members** from the Edit menu.
  - d. Click **Apply**.



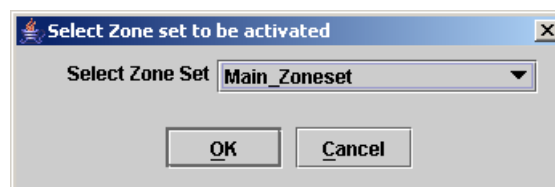
8. From the Save Zoning & Error Check dialog:
  - a. Click **Perform Error Check** and verify that no errors are found.
  - b. Click **Save Zoning**.



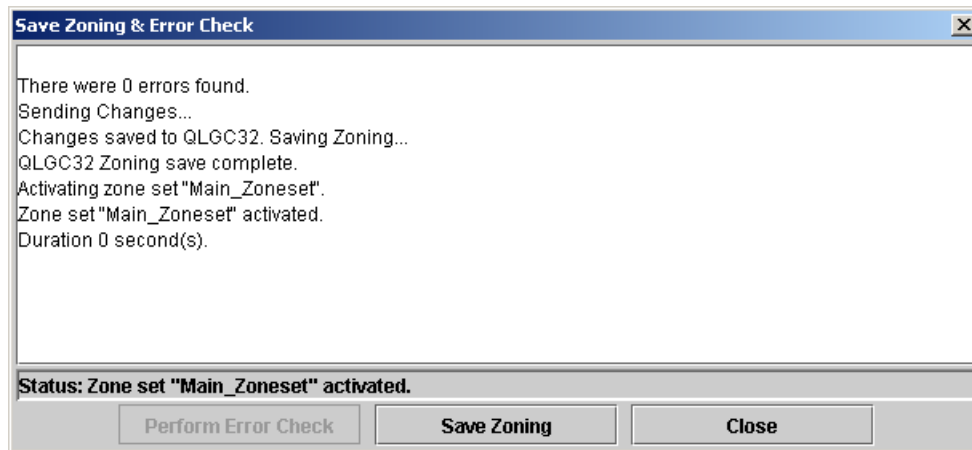
9. If you would like to activate your new zone set now, click **Yes** and continue to step 10. Otherwise, click **No** and skip to step 13.



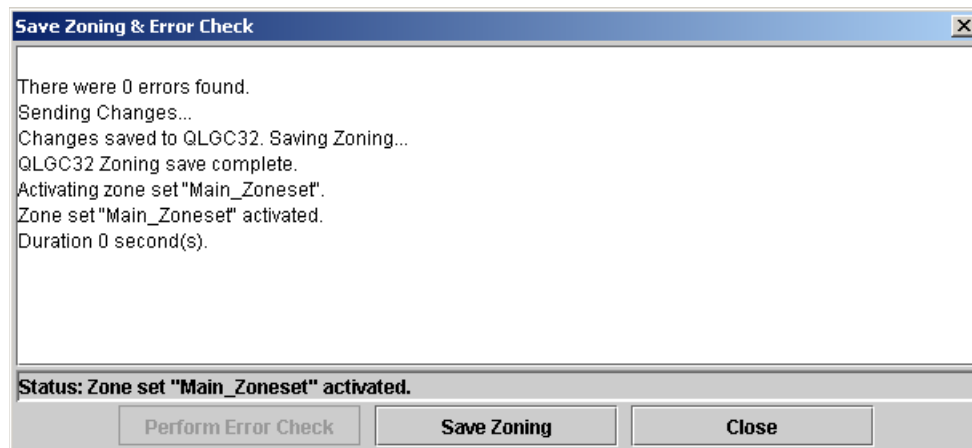
10. Select the zone set you would like to activate and click **OK**:



11. When the zone set has been activated, click **Close**:



12. Click **Close** to exit the Edit Zoning dialog. Skip the remaining steps if you have activated your zone.
13. When the zone set has been saved, click **Close**:

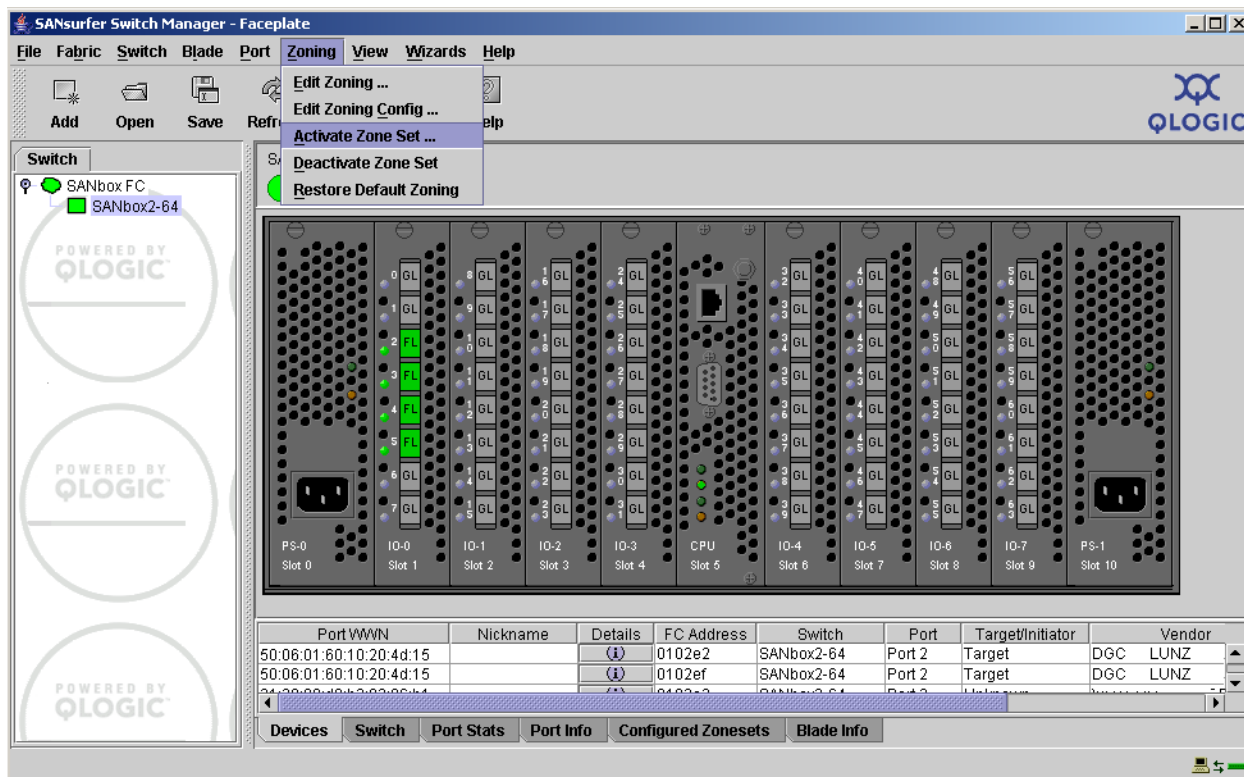


14. Click **Close** to exit from the Edit Zoning dialog.

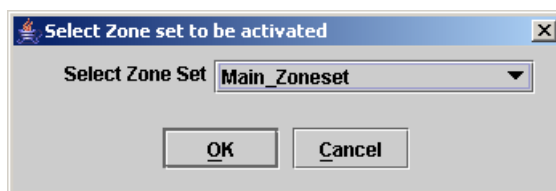
## Activating the Zone Set Manually

To manually activate the zone set, follow these steps:

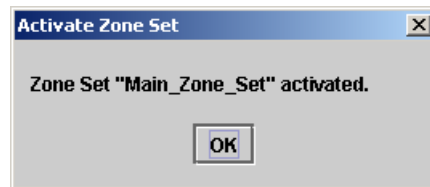
1. From the SANsurfer Switch Manager Faceplate window, select **Activate Zone Set** from the Zoning menu:



2. Select the zone set you would like to activate and click **OK**:



3. Click **OK** to the Activate Zone Set message:







# Index

## A

Application device  
    tested interoperability 11

## B

Brocade 3800  
    tested configuration 14, 16

## C

Cables  
    connecting to SANbox 5200 73  
    connecting to SANbox2-64 87  
Cascade configurations 13, 14, 15, 16  
CLARiiON CX series  
    assigning a host to a storage group 53  
    assigning a LUN a storage group 48  
    creating a LUN 46  
    creating a storage group 44  
    registering a host 50  
    storage overview 43  
Configuration  
    cascade 13, 14, 15, 16  
    minimum storage requirements 43  
    network 55  
    SAN overview 21  
    SANbox 5000 Series 70  
    SANbox2-64 83  
    server overview 22  
    tested versions 12

## D

Driver levels 19

## F

Fibre Channel HBAs  
    overview 22  
Fibre Channel switches  
    overview 55  
Firmware levels 19

## G

Guide  
    getting updates 9

## H

HBAs  
    configuration assumptions 22  
    installing drivers 30  
    installing pseudo LUN driver 32  
    overview 22  
Host  
    assigning to a storage group 53  
    registering on CLARiiON CX series 50

## I

Installation  
    HBA drivers 30  
    HBA pseudo LUN driver 32  
    SANsurfer Management Suite 23  
Interoperability  
    device and application 11  
Introduction  
    QLogic resources 9  
IP address  
    SANbox 5200 63

**L**

## LUN

- assigning to storage group 48
- creating on CLARiiON CX series 46

**M**

## McDATA 4500

- tested configuration 14, 15

**N**

## Network configuration

- overview 55

**P**

## Port properties

- SANbox 5200 70
- SANbox2-64 83

**Q**

## QLA23xx

- tested with XIOtech storage 22

## QLogic

- about 103
- company information 103
- contacting 104
- SANtrack Service and Support Program 17

**S**

## SAN

- configuration overview 21

## SANblade

- overview 22

## SANbox 5000 Series

- configuration overview 70

## SANbox 5200

- assigning IP address 63
- cable connections 73
- cascade configuration 13
- configuration options 60
- port properties 70
- zone configuration 74

## SANbox2-64

- cable connections 87
- cascade configuration 15
- configuration overview 83
- port properties 83
- zone configuration 88

## SANsurfer Switch Manager

- installation 56

## SANtrack Service and Support Program 17

## Server

- assumptions for configuration 22
- configuration overview 22
- tested interoperability 11

## Storage

- assumptions for minimum requirements 43
- tested interoperability 11

## Storage group

- assigning a LUN 48
- creating on CLARiiON CX series 44

## Switches

- SANbox2-64 overview 55

**T**

## Testing

- overview and interoperability 11

**V**

## Version information

- drivers and firmware 19

## W

### Windows

installing HBA drivers 30

## Z

### Zone configuration

SANbox 5200 74

SANbox2-64 88



## QLogic Press Review

The QLogic Press authors value your feedback. We are especially interested in situations where a QLogic Press publication has made a difference. Please review the document, addressing value, subject matter, structure, depth, and quality as appropriate.

Please use one of the following methods to provide feedback so we can make this document better suit your needs:

- Visit the QLogic website at <http://www.qlogic.com/go/qlogic-press-review> and complete the online form; or
- Print both pages of this Press Review form and fax completed pages to: (949) 389-6114.

### Your Contact Information

The data you provide here may be used to send you information about QLogic products, services, or activities.

**Name:** \_\_\_\_\_

**Title:** \_\_\_\_\_

**Company Name:** \_\_\_\_\_

**Email Address:** \_\_\_\_\_

**Phone Number:** \_\_\_\_\_

**Address:** \_\_\_\_\_

**City, State, Zip:** \_\_\_\_\_

### Please identify yourself as belonging to one of the following groups:

- |  |   |
|--|---|
| <input type="checkbox"/> Customer                | <input type="checkbox"/> Business Partner |
| <input type="checkbox"/> Solution Developer      | <input type="checkbox"/> QLogic Employee  |
| <input type="checkbox"/> Other (please specify): | _____                                     |

### QLogic Press Document Title

---

### Please rate your overall satisfaction with the document:

- ☐ Very Satisfied      ☐ Satisfied      ☐ Somewhat Satisfied      ☐ Not Satisfied



[illegible][illegible]

## QLogic Company Information

### Powered by QLogic

Since 1993, more than 50 million QLogic products have shipped inside servers, workstations, RAID subsystems, tape libraries, disk and tape drives. These products were delivered to small, medium, and large enterprises around the world.

Powering solutions from leading companies like Cisco, Dell, EMC, Fujitsu, Hitachi, HP, IBM, NEC, Network Appliance, Quantum, StorageTek, and Sun Microsystems, the broad line of QLogic controller chips, HBAs, network switches and management software move data from storage devices through the network fabric to servers. A member of the S&P 500 and NASDAQ 100, QLogic was named to the following during fiscal year 2004: *Fortune* magazine's 100 Fastest Growing Companies list for the fourth consecutive year, *Forbes'* Best 200 Small Companies for the fifth consecutive year, and *Business Week's* list of 100 Hot Growth Companies.

To learn more about QLogic, visit the QLogic website at [www.qlogic.com](http://www.qlogic.com) or refer to the contact information on the following page.

## Contacting QLogic

For more information about QLogic markets and applications, sales channels, products, milestones and technology roadmaps, please visit the QLogic website at [www.qlogic.com](http://www.qlogic.com) or use one of the following contact numbers.

### Locations

#### North American Corporate Headquarters

26650 Aliso Viejo Parkway  
Aliso Viejo, CA 92656  
Phone: (949) 389-6000  
(800) 662-4471  
Fax (949) 389-6009

#### EMEA Headquarters

Surrey Technology Centre  
40 Occam Road  
Guildford GU2 5YG  
Surrey, UK  
Phone: (44) 1483-295825  
Fax: (44) 1483-295827

#### APAC Headquarters

##### Servants International Corporation

(QLogic exclusive representative)  
1-15-9 Hosoe Bldg. 4F  
Kojima-cho, Chofu-shi  
Tokyo 182  
JAPAN  
Phone: (81) 424889649  
Fax: (81) 424889648

### Partner Programs

#### Channel Programs

(877) 975-6442  
[reseller@qlogic.com](mailto:reseller@qlogic.com)

#### Interoperability Testing

[solutions@qlogic.com](mailto:solutions@qlogic.com)

#### Business Alliances Programs

(949) 389-6557  
[santrackpartner@qlogic.com](mailto:santrackpartner@qlogic.com)

### Sales Education and Technical Training

#### Technical Training

[tech.training@qlogic.com](mailto:tech.training@qlogic.com)

#### Sales Training

[sales.training@qlogic.com](mailto:sales.training@qlogic.com)

### Sales Information

(800) 662-4471

### Technical Support

(952) 932-4040  
[support@qlogic.com](mailto:support@qlogic.com)





# SAN Configuration Guide CLARiiON Storage

v4

05 | 05

Since 1993, over 50 million QLogic products have shipped inside servers, workstations, RAID subsystems, tape libraries, disk and tape drives. These products were delivered to small, medium and large enterprises around the world. Powering solutions from leading companies like Cisco, Dell, EMC, Fujitsu, Hitachi, HP, IBM, NEC, Network Appliance, Quantum, StorageTek and Sun Microsystems, the broad line of QLogic controller chips, host bus adapters, network switches and management software move data from storage devices through the network fabric to servers. A member of the S&P 500 and NASDAQ 100, QLogic was named to the following during fiscal year 2004: (i) Fortune's 100 Fastest Growing Companies list for the fourth consecutive year; (ii) Forbes' Best 200 Small Companies for the fifth consecutive year; and (iii) Business Week's list of 100 Hot Growth Companies. For more information visit [www.qlogic.com](http://www.qlogic.com).

Recent accolades include:

- Member of NASDAQ 100 Index
- *BusinessWeek* Hot Growth Company
- Member of S&P 500 Index
- *Forbes* Best 200 Small Companies
- *Barron's* 500
- *Fortune's* 100 Fastest Growing Companies
- Bloomberg Top 10 High Tech Company
- *Network Computing* Editor's Choice
- *Network Computing* "Well-Connected Award"
- *Business 2.0* 100 Fastest Growing Tech Companies
- *BusinessWeek* Global 1000



Corporate Headquarters  
QLogic Corporation  
26650 Aliso Viejo Parkway  
Aliso Viejo, CA 92656  
949.389.6000

Europe Headquarters  
QLogic (UK) LTD.  
Surrey Technology Centre  
40 Occam Road Guildford  
Surrey GU2 7YG UK  
+440(0)1483 295825

[WWW.QLOGIC.COM](http://WWW.QLOGIC.COM)